

**Final**  
**Site-Specific Field Sampling Plan and**  
**Site-Specific Safety and Health Plan Attachments**  
**DRMO Area, Parcel 85(7)**  
**Fill Area North of Landfill No. 2, Parcel 230(7)**  
**Cleared Area with Mound, Choccolocco Corridor,**  
**Parcel 237(7)**

**Fort McClellan**  
**Calhoun County, Alabama**

**Delivery Order CK005**  
**Contract No. DACA21-96-D-0018**  
**IT Project No. 774645**

**December 1998**

**Revision 1**

## ***Site-Specific Field Sampling Plans***

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DRMO Area, Parcel 85(7)

Fill Area North of Landfill No. 2, Parcel 230(7)

Cleared Area with Mound, Choccolocco Corridor, Parcel 237(7)

**Site Investigation**  
**Final**  
**Site-Specific Field Sampling Plan Attachment**  
**for the DRMO Area, Parcel 85(7)**

**Fort McClellan**  
**Calhoun County, Alabama**

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**December 1998**

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## ***List of Acronyms***

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ADEM	Alabama Department of Environmental Management
bgs	below ground surface
CERFA	Community Environmental Response Facilitation Act
CESAS	Corps of Engineers South Atlantic Savannah
CLP	Contract Laboratory Program
COC	chain of custody
CSEM	conceptual site exposure model
DOD	U.S. Department of Defense
DQO	data quality objective
DRMO	Defense Reutilization and Management Office
EBS	environmental baseline survey
EPA	U.S. Environmental Protection Agency
ESE	Environmental Science and Engineering, Inc.
FTMC	Fort McClellan
GPS	global positioning system
IDW	investigation-derived waste
IT	IT Corporation
PCB	polychlorinated biphenyl
PID	photoionization detector
POL	petroleum, oils and lubricants
PSSC	potential site-specific chemical
QA/QC	quality assurance/quality control
QAP	installation-wide quality assurance plan
RCRA	Resource Conservation and Recovery Act
SAP	installation-wide sampling and analysis plan
SFSP	site-specific field sampling plan
SHP	installation-wide safety and health plan
SI	site investigation
SSHP	site-specific safety and health plan
USACE	U.S. Army Corps of Engineers
USDA	U.S. Department of Agriculture
USAEHA	United States Army Environmental Hygiene Agency

## ***List of Acronyms*** *(Continued)*

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Weston	Roy F. Weston, Inc.
WP	installation-wide work plan



## ***Executive Summary***

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In accordance with Contract No. DACA21-96-D-0018, Delivery Order CK005, IT Corporation (IT) will conduct site investigation activities at the Defense Reutilization and Marketing Office (DRMO) Area, Parcel 85(7), Fort McClellan (FTMC), Calhoun County, Alabama, to determine the presence or absence of potential site-specific chemicals at this site. The purpose of this site-specific field sampling plan (SFSP) is to provide technical guidance for sampling activities at the DRMO Area.

The DRMO facility is reported to be a satellite storage operation for the disposal of FTMC materials and equipment that is managed through the nearby Anniston Army Depot. The DRMO Area, Parcel 85(7) is located near the east end of 18th Street on the Main Post. The site is adjacent to and directly east of Building 350 (Consolidated Maintenance Facility located on 18th Street). The site encompasses approximately 6 acres and contains Buildings 341 through 346 (Building 343 has been removed), and outside storage bins for scrap materials. The DRMO Area originally had a gravel surface, but the site was paved sometime after 1990. The site is surrounded by a chain-link fence. Previously, a rail spur entered the site through the northeast gate and was located along the north side of Building 345 and Building 343. The DRMO Area has storm water drainage along the north and east borders of the site that empties to the north and west into intermittent tributaries of Cave Creek. There is a wet weather marsh area between the fence and the railroad tracks along the storm drainage on the east side of the site.

The DRMO Area received hazardous materials and hazardous wastes for short-term storage until 1985. Currently, nonhazardous materials and equipment are managed at this facility (e.g. old appliances, furniture, empty and cleaned drums, brass ammunition shell casings, old tires, scrap metal, lumber, surplus vehicles, surplus machinery and equipment).

Surplus materials and equipment sales are held approximately every 4 weeks. Most items are stored on wood pallets or directly on asphalt. Brass shell casings and scrap metals are kept in metal bins. Buildings 341 and 345 are warehouses used for dry storage. Presently, waste oil, antifreeze, and waste fuels are not handled at the DRMO Area.

The DRMO Area was identified as a solid waste management unit at FTMC (Environmental Science and Engineering, Inc., 1998). Prior to 1985, a Resource Conservation and Recovery Act (RCRA) Interim Status Storage Facility was in use within the DRMO Area near Building 346 for short-term storage of hazardous materials and hazardous wastes, including pesticides, solvents,

corrosives, batteries, and petroleum, oils, and lubricants (POL). The storage facility served as secondary containment to hazardous wastes overpacked to meet U.S. Department of Transportation guidelines pending transfer to a permitted facility. The RCRA Interim Status Storage Facility that was located in the south corner of the DRMO Area was remediated and closed in 1992 by FTMC. In 1985, soils at the RCRA Interim Status Storage Facility were sampled and found to contain various semivolatile compounds at low concentrations. The U.S. Army Environmental Hygiene Agency (USAEHA) concluded that a release had occurred and recommended further investigation (USAEHA, 1986). Closure involved sampling and analyzing soils for RCRA waste parameters, removing contaminated soils, and backfilling the excavation with clean fill.

Potential contaminant sources at the DRMO Area include hazardous materials and hazardous wastes, including pesticides, solvents, batteries, and POLs. IT will collect nine surface soil samples, nine subsurface soil samples, six groundwater samples, five surface water samples, and five sediment samples at this site. Chemical analyses of the samples collected during the field program will include volatile organic compounds, semivolatile organic compounds, metals, chlorinated pesticides, polychlorinated biphenyls, chlorinated herbicides, and organophosphorus pesticides. Additionally, the sediment samples will be analyzed for total organic carbon and grain size. Results from these analyses will be compared with site-specific screening levels specified in the installation-wide work plan (WP), and regulatory agency guidelines.

This SFSP attachment to the installation-wide sampling and analysis plan (SAP) (IT, 1998a) for the DRMO Area will be used in conjunction with the site-specific safety and health plan (SSHP), and the WP (IT, 1998b) and SAP. The SAP includes the installation-wide safety and health plan, waste management plan, and quality assurance plan. Site-specific hazard analyses are included in the SSHP.

## ***1.0 Project Description***

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### ***1.1 Introduction***

The U.S. Army is conducting studies of the environmental impact of suspected contaminants at Fort McClellan (FTMC) in Calhoun County, Alabama, under the management of the U.S. Army Corps of Engineers (USACE)-Mobile District. The USACE has contracted IT Corporation (IT) to provide environmental services for the site investigation (SI) of the Defense Reutilization and Marketing Office (DRMO) Area, Parcel 85(7) under Delivery Order CK005, Contract No. DACA21-96-D-0018.

This site-specific field sampling plan (SFSP) attachment to the installation-wide sampling and analysis plan (SAP) (IT, 1998a) for FTMC, Calhoun County, Alabama, has been prepared to provide technical guidance for sample collection and analysis at the DRMO Area, Parcel 85(7). This SFSP will be used in conjunction with the site-specific safety and health plan (SSHP) developed for the DRMO Area, and the installation-wide work plan (WP) (IT, 1998b) and SAP. The SAP includes the installation-wide safety and health plan (SHP), waste management plan, and quality assurance plan (QAP).

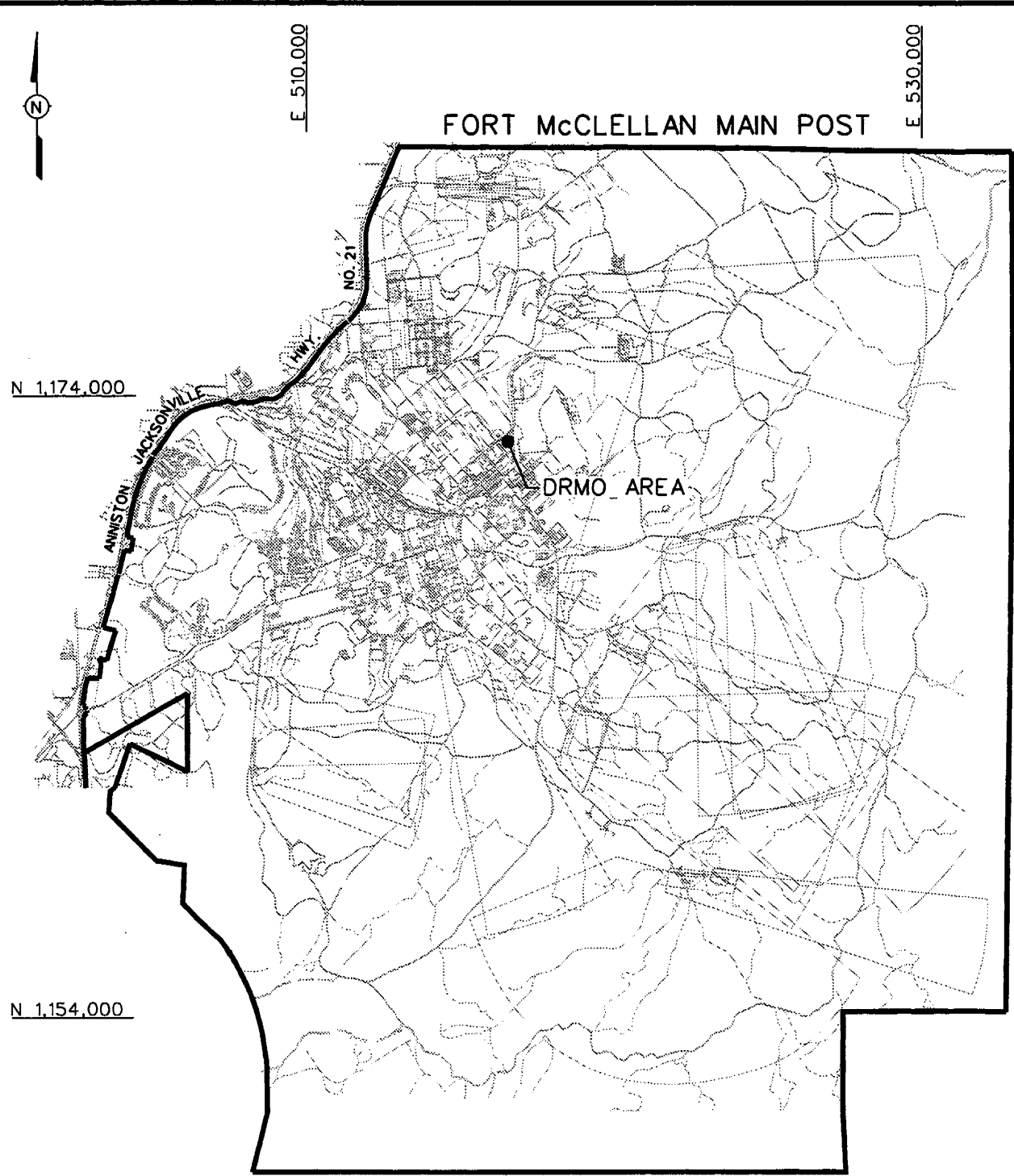
### ***1.2 Site Description***

The DRMO facility is reported to be a satellite storage operation for the disposal of FTMC materials and equipment that is managed through the nearby Anniston Army Depot. The DRMO Area, Parcel 85(7) is located near the east end of 18th Street on the Main Post (Figure 1-1). The site is adjacent to and directly northeast of Building 350 (Consolidated Maintenance Facility located on 18th Street). The site encompasses approximately 6 acres and contains Buildings 341 through 346 (Building 343 has been removed), and outside storage bins for scrap materials (Figure 1-2). The DRMO Area site originally had a gravel surface, but the site was paved sometime after 1990. The site is surrounded by a chain-link fence. Previously, a rail spur entered the site through the northeast gate and was located along the north side of Building 345 and Building 343 (Figure 1-2). The DRMO Area has storm water drainage along the north and east borders of the site that empties to the north and west into intermittent tributaries of Cave Creek. There is a wet weather marsh area between the fence and the railroad tracks along the storm drainage on the east side of the site.


The DRMO Area received hazardous materials and hazardous wastes for short-term storage until 1985. Presently, waste oil, antifreeze, and waste fuels are not handled at the DRMO Area.

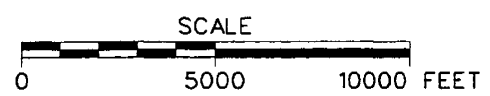
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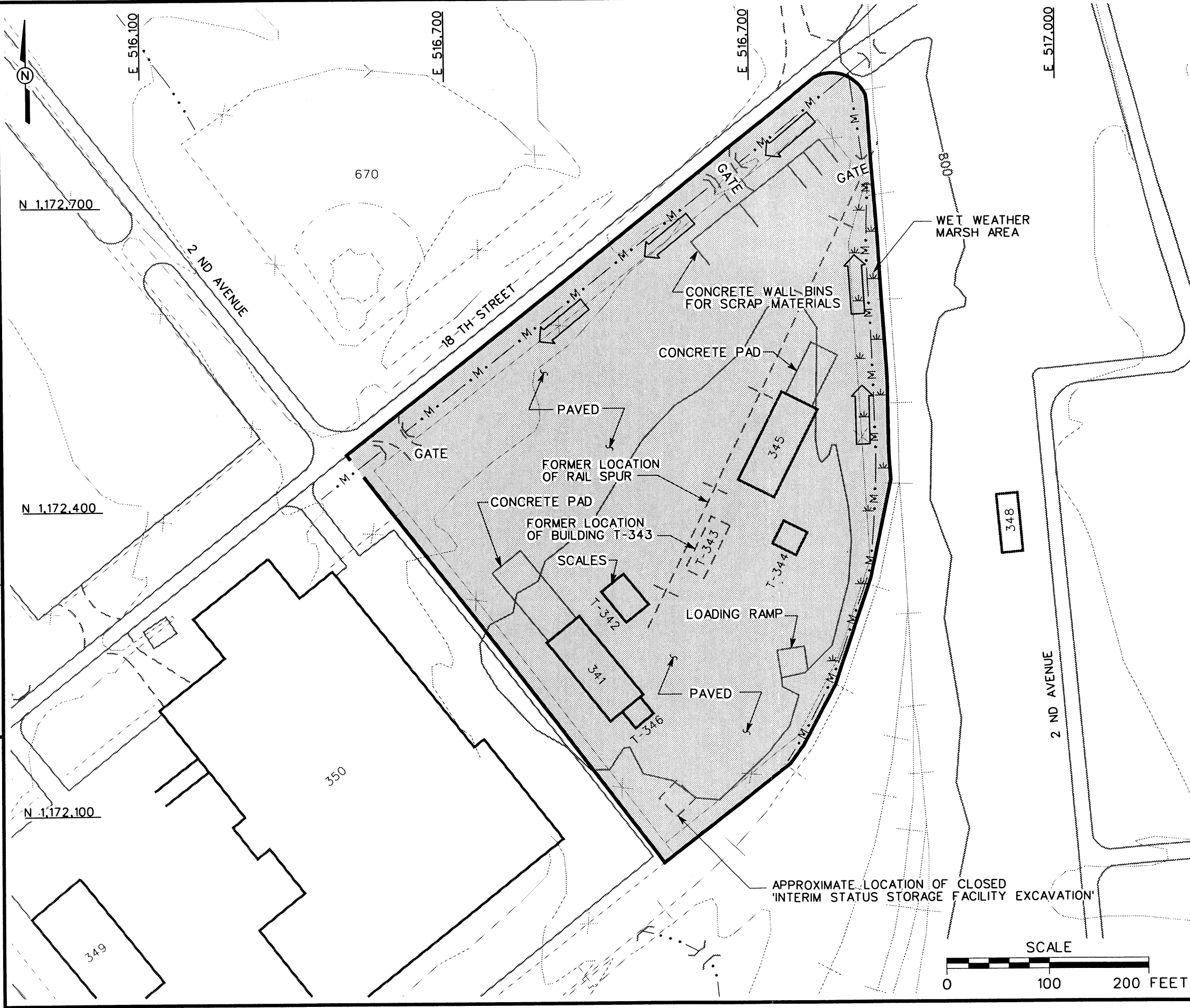
 FORT McCLELLAN BOUNDARY



**FIGURE 1-1  
SITE LOCATION MAP  
DRMO AREA,  
PARCEL 85(7)**

U. S. ARMY CORPS OF ENGINEERS  
MOBILE DISTRICT  
FORT McCLELLAN  
CALHOUN COUNTY, ALABAMA  
Contract No. DACA21-96-D-0018





### LEGEND

- UNIMPROVED ROADS AND PARKING
- PAVED ROADS AND PARKING
- BUILDING
- TOPOGRAPHIC CONTOURS
- MARSH / WETLANDS
- PARCEL BOUNDARY
- BRIDGE
- CULVERT WITH HEADWALL
- SURFACE DRAINAGE / CREEK
- MANMADE SURFACE DRAINAGE FEATURE
- FENCE
- RAILROAD
- FLOW DIRECTION

**FIGURE 1-2**  
**SITE MAP**  
**DRMO AREA,**  
**PARCEL 85(7)**

U. S. ARMY CORPS OF ENGINEERS  
 MOBILE DISTRICT  
 FORT McCLELLAN  
 CALHOUN COUNTY, ALABAMA  
 Contract No. DACA21-96-D-0018

INTERNATIONAL  
 TECHNOLOGY  
 CORPORATION

Currently, nonhazardous materials and equipment are managed at this facility, as follows (Environmental Science and Engineering, Inc. [ESE], 1998):

- Old appliances
- Furniture
- Clothes
- Empty and cleaned drums
- Miscellaneous containers
- Brass ammunition shell casings
- Ammunition boxes
- Old tires
- Scrap metal
- Plastic
- Lumber
- Surplus vehicles
- Surplus machinery and equipment.

Surplus materials and equipment sales are held approximately every 4 weeks. Most items are stored on wood pallets or directly on asphalt. Brass shell casings and scrap metals are kept in metal bins. Buildings 341 and 345 are warehouses used for dry storage.

The DRMO Area was identified as a solid waste management unit at FTMC (ESE, 1998). Prior to 1985, a Resource Conservation and Recovery Act (RCRA) Interim Status Storage Facility was identified and in use within the DRMO Area site near Building 346 for short-term storage of hazardous materials and hazardous wastes, including pesticides, solvents, corrosives, batteries, and petroleum, oils, and lubricants (POL). The storage facility provided secondary containment for hazardous wastes overpacked according to U.S. Department of Transportation requirements until transferred to a permitted facility.

The storage facility consisted of two fiberglass CONEX storage boxes positioned on top of two interlocking aluminum panels. The panels butted together to form a flooring pad that measured approximately 15 feet by 36 feet (Roy F. Weston, Inc. [Weston], 1990). The storage facility was located in the south corner of the DRMO Area site, south of Building 346 (Figure 1-2).

In 1985, soils at the RCRA Interim Status Storage Facility were sampled and found to contain various semivolatile compounds at low concentrations. The U.S. Army Environmental Hygiene Agency (USAEHA) concluded that a release had occurred and recommended further investiga-

tion (USAEHA, 1986). Another report indicated that stained/contaminated soil was present near the transformer storage area and the scrap metal storage area (ESE, 1998).

Weston (1990) indicated that the DRMO Area had a lead-acid battery storage area on a gravel pad at Building 344 and an outdoor transformer storage area near the entrance of the DRMO Area. The battery storage area was still in existence in October 1992 (ESE, 1998). The DRMO Area was paved sometime after 1990 with asphalt. There was no evidence of where the batteries were stored near Building 344 when observed during the IT site visit, June 23, 1998. Also, there was no evidence of where the transformers were stored near the DRMO Area entrance.

The RCRA Interim Status Storage Facility was remediated and finally closed in 1992 by FTMC. Closure involved sampling and analyzing soils for RCRA waste parameters, removing contaminated soils, backfilling the excavation with clean fill, and collecting and analyzing closure samples. On September 23, 1992, the Alabama Department of Environmental Management (ADEM) granted approval of satisfactory clean closure of the RCRA Interim Status Storage Facility (ESE, 1998).

The elevation at the DRMO Area is approximately 800 feet (National Geodetic Vertical Datum of 1929). Local shallow groundwater direction is probably controlled by topography and is likely to the north or northwest at the site. The soils found at this site are composed of the Rarden series soils (U.S. Department of Agriculture [USDA], 1961). This series consists of moderately well-drained, strongly acid to very strongly acid soils. These soils generally occur in large areas on wide shale ridges having slopes of 2 to 10 percent. These soils have developed from the residuum of shale and fine-grained, platy sandstone or limestone. In eroded areas, the surface soil is brown silt loam. The subsoil is yellowish-red clay or silty clay mottled with strong brown color. Concretions and fragments of sandstone, up to one-half-inch diameter, are common on the surface and in the soil; however, the surface of some areas have sandstone gravel 3 inches in diameter.

Soils at this site fall into the Rarden silty clay loams (ReB3) (USDA, 1961). This mapping unit consists of severely eroded soils that have 2 to 6 percent slopes and a thin solum. The color of these surface soils (2- to 4-inch layer) is yellowish-red or dark-brown silty clay loam. The depth to bedrock is approximately 1.5 to 4 feet below ground surface (bgs). The depth to the water table is typically greater than 20 feet bgs.

### **1.3 Scope of Work**

The scope of work for activities associated with the SI at the DRMO Area, specified by the statement of work (USACE, 1998), includes the following tasks:

- Develop the SFSP attachment
- Develop the SSHP attachment
- Collect nine surface soil samples, nine subsurface soil samples, six groundwater samples, five surface water samples, and five sediment samples to determine whether potential site-specific chemicals (PSSC) are present at the DRMO Area and to provide data to determine any future planned corrective measures and closure activities.

At completion of the field activities and sample analyses, draft and final SI summary reports will be prepared to evaluate the absence or presence of PSSCs at this site, and to recommend further actions, if appropriate.



## ***2.0 Summary of Existing Environmental Studies***

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ESE conducted an environmental baseline survey (EBS) to document current environmental conditions of all FTMC property (ESE, 1998). The study identified sites that, based on available information, have no history of contamination and comply with U.S. Department of Defense (DOD) guidance on fast track cleanup at closing installations. The EBS also provides a baseline picture of FTMC properties by identifying and categorizing the properties by seven criteria.

1. Areas where no storage, release, or disposal (including migration) has occurred.
2. Areas where only storage has occurred.
3. Areas of contamination below action levels.
4. Areas where all necessary remedial actions have been taken.
5. Areas of known contamination with removal and/or remedial action underway.
6. Areas of known contamination where required response actions have not been taken.
7. Areas that are not evaluated or require further evaluation.

The EBS was conducted in accordance with the Community Environmental Response Facilitation Act (CERFA) (CERFA-Public Law 102-426) protocols and DOD policy regarding contamination assessment. Record searches and reviews were performed on all reasonably available documents from FTMC, ADEM, U.S. Environmental Protection Agency (EPA) Region IV, and Calhoun County, as well as a database search of Comprehensive Environmental Response, Compensation, and Liability Act-regulated substances, petroleum products, and RCRA-regulated facilities. Available historic maps and aerial photographs were reviewed to document historic land uses. Personal and telephone interviews of past and present FTMC employees and military personnel were conducted. In addition, visual site inspections were conducted to verify conditions of specific property parcels.

The RCRA Interim Status Storage Facility that was located in the south corner of the DRMO Area was remediated and closed in 1992 by FTMC. Closure involved sampling and analyzing soils for investigative RCRA waste parameters, removing contaminated soils, and backfilling the excavation with clean fill.

In 1985, soil samples were collected adjacent to the aluminum panel flooring of the RCRA Interim Status Storage Facility. The samples were analyzed for priority pollutants parameters that included pesticides, polychlorinated biphenyls (PCB), and semivolatile compounds. The results of the analyses indicated a presence of pentachlorophenol, 2,4,6-trichlorophenol, naphthalene, phenanthrene, and other semivolatile compounds at low concentrations (USAEHA, 1986). The detected compounds and their concentrations are listed in Table 2-1. The locations of the samples at the storage facility were not identified in the USAEHA report.

A closure plan was prepared by FTMC and approved by ADEM for the closure of the RCRA Interim Status Storage Facility at the DRMO Area. In May 1990, the CONEX boxes and the aluminum panel flooring were removed and the soil under the storage facility was excavated to approximately 4 feet bgs. Three composite soil samples were collected from the bottom of the excavation and submitted for analysis for the following investigative RCRA waste parameters:

- Volatile compounds
- Semivolatile compounds
- Organochlorine pesticides and arochlors
- Chlorinated herbicides
- Extraction procedure toxicity metals
- Total cyanide
- Reactivity
- Corrosivity
- Ignitability.

All samples were nondetect for the defined parameters except one sample (Area "A") that showed methylene chloride at a concentration of 14 parts per billion. Table 2-2 is a summary of the VOCs analytical data generated from the three soil samples collected as part of the RCRA investigation. Appendix A contains the analytical results of sample Area "A" analysis that contained the methylene chloride.

As a result of detecting the methylene chloride in the soil sample at the storage facility, ADEM requested, in a March 16, 1992 letter, that FTMC collect background soil samples in an area unaffected by the RCRA Interim Status Storage Facility for comparison to the soil data showing methylene chloride. The background samples were collected by FTMC on March 19, 1992, and submitted for methylene chloride analysis. Methylene chloride was not detected in any of the four background samples. Therefore, additional samples were required by ADEM to be collected at the RCRA Interim Status Storage Facility excavation to determine the presence of methylene chloride at the site.

Table 2-1

**Summary of Detected Analytes for the Soil Sample Data<sup>a</sup>**  
**1985 Soil Investigation at the RCRA Interim Status Storage Facility**  
**DRMO Area, Parcel 85(7)**  
**Fort McClellan, Calhoun County, Alabama**

Sample Number Sample Matrix Collection Date		005 Soil 12/85	006 Soil 12/85	007 Soil 12/85	Detection Limit (µg/g)	RBC <sup>b</sup> (mg/kg)
Parameters	Units					
Pentachlorophenol	µg/g	BDL	3	14	2.5	5.30
2,4,6-trichlorophenol	µg/g	BDL	5	72	2.5	58.0
Benzo(b)fluoranthene	µg/g	TRC	4	BDL	1.0	0.88
Benzo(g,h,i)perylene	µg/g	TRC	1	TRC	2.5	2,300
Benzo(k)fluoranthene	µg/g	TRC	4	BDL	1.0	8.8
Diethyl phthalate	µg/g	1	TRC	BDL	1.0	63,000
Fluoranthene	µg/g	TRC	2	BDL	1.0	3,100
Naphthalene	µg/g	TRC	TRC	2	1.0	3,100
Phenanthrene	µg/g	TRC	1	2	1.0	2,300
Pyrene	µg/g	TRC	2	BDL	1.0	2,300

<sup>a</sup>U.S. Army Environmental Hygiene Agency (USAEHA), 1986, *Hazardous Waste Consultant No. 37-26-1649-88, Fort McClellan, Alabama, 8-12 December 1986*, Aberdeen Proving Ground, Maryland.

<sup>b</sup>U.S. Environmental Protection Agency (EPA), Region III, *Risk-Based Concentrations for Residential Soil Ingestion*, October 22, 1997.

µg/g - Micrograms per gram.

mg/kg - Milligrams per kilogram.

BDL - Below detection limit.

TRC - Constituent detected, but below quantifiable limits.

RBC - Risk-based concentration for residential exposure scenario (EPA Region III RBC Tables; October 22, 1997).

**Table 2-2**

**Summary of Volatile Compounds for Soil Sample Data  
1990 Soil Investigation at the RCRA Interim Status Storage Facility  
DRMO Area, Parcel 85(7)  
Fort McClellan, Calhoun County, Alabama**

Compounds	MDL (ppb)	Concentration (ppb)	Compounds	MDL (ppb)	Concentration (ppb)
Chloromethane	10	BMDL	trans-1,2-Dichloroethene	5	BMDL
Bromomethane	10	BMDL	Trichloroethene	5	BMDL
Vinyl chloride	10	BMDL	Dibromochloromethane	5	BMDL
Chloroethane	10	BMDL	1,1,2-Trichloroethane	5	BMDL
Methylene chloride	5	14	Benzene	5	BMDL
2-Propanone (Acetone)	100	*	2-Chloroethylvinylether	5	ND
Carbon disulfide	5	BMDL	cis-1,3-Dichloropropene	10	BMDL
1,1-Dichloroethene	5	BMDL	Bromoform	5	BMDL
1,1-Dichloroethane	5	BMDL	2-Hexanone	50	BMDL
trans-1,2-Dichloroethene	5	BMDL	4-Methyl-2-pentanone	50	BMDL
Chloroform	5	BMDL	Tetrachloroethene	5	BMDL
1,2-Dichloroethane	5	BMDL	1,1,2,2-Tetrachloroethane	5	BMDL
2-Butanone (MEK)	100	BMDL	Toluene	5	BMDL
1,1,1-Trichloroethane	5	BMDL	Chlorobenzene	5	BMDL
Carbon tetrachloride	5	BMDL	Ethyl benzene	5	BMDL
Vinyl acetate	50	BMDL	Total xylenes	5	BMDL
Bromodichloromethane	5	BMDL	Styrene	5	BMDL
1,2-Dichloropropane	5	BMDL			

\* Presence indicated, but less than method detection limit.

BMDL – Below method detection limit.

MDL – Method detection limit.

ND – Not determined.

ppb – Parts per billion.

On May 5, 1992, FTMC removed the fill dirt from the original excavation to an approximate depth of 4 feet bgs. Soil samples were collected at a depth of 6 inches below the excavation floor in the same area where the sample Area "A" was originally collected. Four samples were collected and submitted for analysis to the USACE South Atlantic Division Laboratory. The analytical results indicated that all samples were less than the detection limit. The sample results are provided in Table 2-3. The locations of these samples are not available. On September 23, 1992, ADEM granted FTMC approval of satisfactory clean closure of the RCRA Interim Status Storage Facility.

Based on the available history of the site, this is the only investigation that has been performed at the DRMO Area site.

This CERFA parcel is a Category 7 site. It is a parcel where various types of materials, equipment, vehicles, hazardous materials, and hazardous wastes have been stored. Some of these materials may possibly have been released onto the site or to the environment, and/or were disposed of on site property. The DRMO Area lacks adequate documentation and, therefore, requires additional evaluation to determine the environmental condition of the parcel.

**Table 2-3**

**Soil Sample Data<sup>a</sup>**  
**for the Clean Closure of the RCRA Interim Status Storage Facility**  
**DRMO Area, Parcel 85(7)**  
**Fort McClellan, Calhoun County, Alabama**

<b>Sample Number</b>	<b>Sample ID</b>	<b>Sample Date</b>	<b>Approximate Sample Depth (feet bgs)</b>	<b>Methylene Chloride (ppb)</b>
13369	FTMC-5001-0001	5/2/92	4.5	<1
13370	FTMC-5001-0002	5/2/92	4.5	<1
13371	FTMC-5001-0003	5/2/92	4.5	<1
13372	FTMC-5001-00QA	5/2/92	4.5	<1

<sup>a</sup>Department of Army, Major General Robert D. Orton, (Orton) 1992, *Closure of Interim Status Storage Facility, USEPA Identification Number AL4 210 020 562*, Communication to Mr. Steven O. Jenkins, RCRA Compliance Branch, Alabama Department of Environment Management, August.

bgs -Below ground surface.

ppb - Parts per billion.

## **3.0 Site-Specific Data Quality Objectives**

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### **3.1 Overview**

The data quality objectives (DQO) process is followed to establish data requirements. This process ensures that the proper quantity and quality of data are generated to support the decision-making process associated with the action selection for the DRMO Area, Parcel 85(7) site. This section incorporates the components of the DQO process described in the EPA publication EPA 540-R-93-071, *Data Quality Objectives Process for Superfund* (EPA, 1993). The DQO process as applied to the DRMO Area site is described in more detail in Section 4.3 of the WP. Table 3-1 provides a summary of the factors used to determine the appropriate quantity of samples, and the procedures necessary to meet the objectives of the SI and establish a basis for future action at this site.

The samples will be analyzed using EPA SW-846 methods, including Update III Methods where applicable, as presented in Chapter 4.0 in this SFSP and Table 6-1 in the QAP (IT, 1998a). Data will be reported and evaluated in accordance with Corps of Engineers South Atlantic Savannah (CESAS) Level B criteria (USACE, 1994) and the stipulated requirements for the generation of definitive data (Section 3.1.2 of the QAP). Chemical data will be reported via hard copy data packages by the laboratory using Contract Laboratory Program (CLP)-like forms. These packages will be validated in accordance with EPA National Functional Guidelines by Level III criteria.

### **3.2 Data Users and Available Data**

The intended data users and available data related to the SI at the DRMO Area, presented in Table 3-1, have been used to formulate a conceptual site exposure model (CSEM) presented in Section 3.3. This CSEM was developed to support the preparation of this SFSP, which is necessary to meet the objectives of these activities and to establish a basis for future action at the site. The data users for the data and information generated during field activities are primarily EPA, USACE, ADEM, FTMC, and the USACE supporting contractors. This SFSP, along with the necessary companion documents, has been designed to provide the regulatory agencies with sufficient detail to reach a determination as to the adequacy of the scope of work. The program has also been designed to provide the level of defensible data and information required to confirm or rule out the existence of residual PSSCs in the site media.

Table 3-1

**Summary of Data Quality Objectives  
Site Investigation  
DRMO Area, Parcel 85(7)  
Fort McClellan, Calhoun County, Alabama**

Potential Data Users	Available Data	Conceptual Site Model	Media of Concern	Data Uses and Objectives	Data Types	Analytical Level	Data Quantity
EPA, ADEM USACE, DOD, FTMC, IT Corporation Other contractors, and possible future land users	Closure data for a RCRA Interim Status Storage Facility	<u>Contaminant Source</u> DRMO Area and closed interim status storage facility for hazardous materials and wastes.  <u>Migration Pathways</u> Infiltration to subsurface soil, infiltration and leaching to ground- water, dust emissions and volatilization to air, runoff and erosion to surface water and sediment, and volatilization from groundwater to air.  <u>Potential Receptors</u> Groundskeeper (current and future) Construction worker (future) Resident (future).  <u>PSSC</u> Hazardous wastes including pesticides, solvents, lead batteries, other metals, petroleum oils, and lubricants.	<u>Surface soil</u>	SI to confirm the presence or absence of contamination in the site media	<u>Surface soil</u> TCL VOCs, TCL SVOCs, TAL Metals, Chlorinated Pesticides, PCBs, Chlorinated Herbicides, Organophosphorus Pesticides,	Definitive data in CESAS Level B data packages	9 direct-push soil samples + QC
			<u>Subsurface Soil</u>				
			<u>Groundwater</u>	Definitive quality data for future decision- making			
			<u>Surface Water</u>		<u>Subsurface Soil</u> TCL VOCs, TCL SVOCs, TAL Metals, Chlorinated Pesticides, PCBs, Chlorinated Herbicides, Organophosphorus Pesticides,	Definitive data in CESAS Level B data packages	9 direct-push soil samples + QC
			<u>Sediment</u>				
					<u>Direct-Push Groundwater</u> TCL VOCs, TCL SVOCs, TAL Metals, Chlorinated Pesticides, PCBs, Chlorinated Herbicides, Organophosphorus Pesticides,	Definitive data in CESAS Level B data packages	6 direct-push groundwater samples + QC
					<u>Surface Water</u> TCL VOCs, TCL SVOCs, TAL Metals, Chlorinated Pesticides, PCBs, Chlorinated Herbicides, Organophosphorus Pesticides,	Definitive data in CESAS Level B data packages	5 surface water samples + QC
					<u>Sediment</u> TCL VOCs, TCL SVOCs, TAL Metals, Chlorinated Pesticides, PCBs, Chlorinated Herbicides, Organophosphorus Pesticides, TOC, and Grain Size	Definitive data in CESAS Level B data packages	5 sediment samples + QC

ADEM - Alabama Department of Environmental Management.

CESAS - Corps of Engineers South Atlantic Savannah.

DOD - U.S. Department of Defense.

EPA - U.S. Environmental Protection Agency.

FTMC - Fort McClellan.

PSSC - Potential site-specific chemical.

QC - Quality control.

VOC - Volatile organic compound.

SVOC - Semivolatile organic compound.

TAL - Target analyte list.

TCL - Target compound list.

TOC - Total organic carbon.

PCB - Polychlorinated biphenyl.

USACE - U.S. Army Corps of Engineers.



### **3.3 Conceptual Site Exposure Model - Human Health Evaluation**

The CSEM provides the basis for identifying and evaluating the potential risks to human health in the risk assessment. The CSEM includes the receptors appropriate to all plausible scenarios, and the potential exposure pathways. Graphically presenting possible pathways by which a potential receptor may be exposed, including sources, release and transport pathways, and exposure routes, facilitates consistent and comprehensive evaluation of risk to human health, and helps to ensure that potential pathways are not overlooked. The elements necessary to construct a complete exposure pathway and develop the CSEM include:

- Source (i.e., contaminated environmental) media
- Contaminant release mechanisms
- Contaminant transport pathways
- Receptors
- Exposure pathways.

Contaminant release mechanisms and transport pathways are not relevant for direct receptor contact with a contaminated source medium.

Currently, the DRMO Area is used for short-term storage and handling of items and materials that are unlikely to result in the release of hazardous substances. The RCRA Interim Status Storage Facility at the south end of the DRMO Area was closed as clean in 1992. PSSCs at this site include metals (particularly lead), solvents, pesticides, PCBs, herbicides, POLs, and other hazardous materials. Primary contaminant release was probably to surface or subsurface soil. Potential contaminant transport pathways include infiltration to subsurface soil, infiltration and leaching to groundwater, dust emissions and volatilization to ambient air, and runoff and erosion through storm drainage along the north and east edge of the site to surface water and sediment. Media of interest include surface and subsurface soil, groundwater, surface water, and sediment.

As previously noted, the DRMO Area is currently used for short-term materials handling and storage. It is adjacent to and northeast of Building 350, which is used as a maintenance facility, and adjacent to the railroad, which forms a large section of the eastern boundary of the DRMO site. Current DRMO site usage is best described as commercial and industrial. The only plausible receptors under the current site-use scenario is the groundskeeper. Other potential receptor scenarios considered, but excluded, under current site usage are the:

- Recreational site user: There is nothing at this site that would attract a recreational site user. The area is fenced, further reducing the likelihood of recreational site usage.
- Resident: The site is not currently used for residential purposes.
- Venison consumption: The site does not offer habitat or browse for deer or the opportunity for hunting.
- Fish consumption: The storm drainage system and minor tributaries that flow to Cave Creek are insufficient to support sport fishing.

Future use of the DRMO Area is projected to be part of a Rail Industrial Park (FTMC, 1997). Plausible receptors under commercial/industrial future site use include the groundskeeper and construction worker. In addition, the resident is included as a measure of conservatism. The fish and venison consumption scenarios are not evaluated under the future site-use scenario for the reasons provided under current site use considerations. Contaminant release and transport mechanisms, source and exposure media, receptors, and exposure pathways are summarized in Figure 3-1 and Table 3-1.

### ***3.4 Decision-Making Process, Data Uses, and Needs***

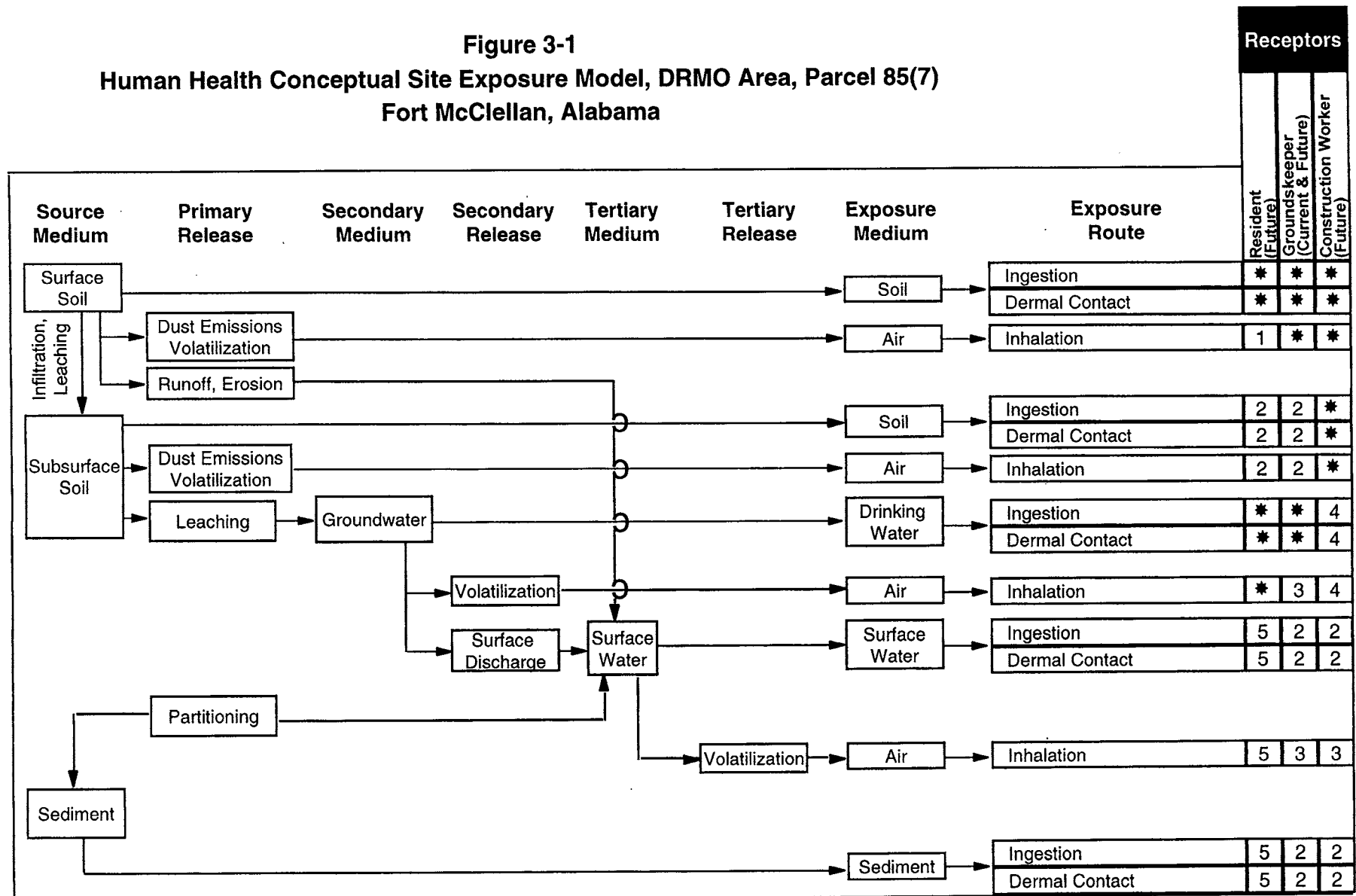
The decision-making process consists of a seven-step process that is presented in detail in Section 4.3 of the WP and will be followed during the SI at the DRMO Area site. Data uses and needs are summarized in Table 3-1.

#### ***3.4.1 Risk Evaluation***

Confirmation of contamination at the DRMO Area will be based on comparing detected PSSCs with site-specific screening levels and background concentrations developed in the WP. EPA definitive data with CESAS Level B data packages will be used to achieve detection limits sufficient to determine whether or not the established guidance criteria are exceeded in site media. Definitive data will be adequate for confirming the presence of site contamination and for supporting a feasibility study and risk assessment.

Assessment of potential ecological risk associated with sites or parcels (e.g., surface water and sediment sampling, specific ecological assessment methods, etc.) will be addressed in the WP (IT, 1998b).

**Figure 3-1**  
**Human Health Conceptual Site Exposure Model, DRMO Area, Parcel 85(7)**  
**Fort McClellan, Alabama**



\* = Complete exposure pathway quantified in site-specific screening level (SSSL) development.

1 = Volatilization from undisturbed surface soil deemed insignificant; soil is likely to be paved or vegetated, reducing dust emissions to insignificant levels; inhalation pathway not quantified.

2 = Incomplete exposure pathway.

3 = Although theoretically complete, this pathway is judged to be insignificant.

4 = Although theoretically complete, these pathways are not quantified for the construction worker because SSSLs developed for the groundskeeper would be at least as restrictive.

5 = Although theoretically complete, SSSLs for these pathways are developed only for the recreational site user. SSSLs developed for the recreational site user may be used to estimate risk for this receptor.

### ***3.4.2 Data Types and Quality***

Surface and subsurface soil, groundwater, surface water, and sediment will be sampled and analyzed to meet the objectives of the SI at the DRMO Area. Quality assurance/quality control (QA/QC) samples will be collected for all sample types as described in Chapter 4.0 of this SFSP.

Samples will be analyzed by EPA-approved SW-846 methods, where available; comply with EPA definitive data requirements; and be reported using hard copy data packages. In addition to meeting the quality needs of this SI, data analyzed at this level of quality are appropriate for all phases of site characterization, remedial investigation, and risk assessment.

### ***3.4.3 Precision, Accuracy, and Completeness***

Laboratory requirements of precision, accuracy, and completeness for this SI are provided in Chapter 9.0 of the QAP (IT, 1998a).

## **4.0 Field Activities**

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### **4.1 Utility Clearances**

Prior to performing any intrusive sampling, a utility clearance will be performed at all locations where surface soil, subsurface soil, surface water, and sediment samples will be collected, using the procedure outlined in Section 4.2.6 of the SAP (IT, 1998a). The site manager will mark the proposed locations with stakes, coordinate with the installation to clear the proposed locations for utilities, and obtain digging permits. Once the locations are cleared, the stakes will be labeled as cleared.

### **4.2 Environmental Sampling**

The environmental sampling program during the SI at the DRMO Area includes the collection of nine surface soil samples, nine subsurface soil samples, six groundwater samples, five surface water samples, and five sediment samples for chemical analyses. These samples will be collected and analyzed to provide data for characterizing the site to determine the environmental condition of the site and any further action to be conducted at the site.

#### **4.2.1 Surface Soil Sampling**

Surface soil samples will be collected from nine soil borings installed at the DRMO Area.

##### **4.2.1.1 Sample Locations and Rationale**

The surface soil sampling rationale is provided in Table 4-1. Proposed sampling locations are shown on Figure 4-1. Surface soil sample designations, depths, and required QA/QC sample quantities are listed in Table 4-2.

##### **4.2.1.2 Sample Collection**

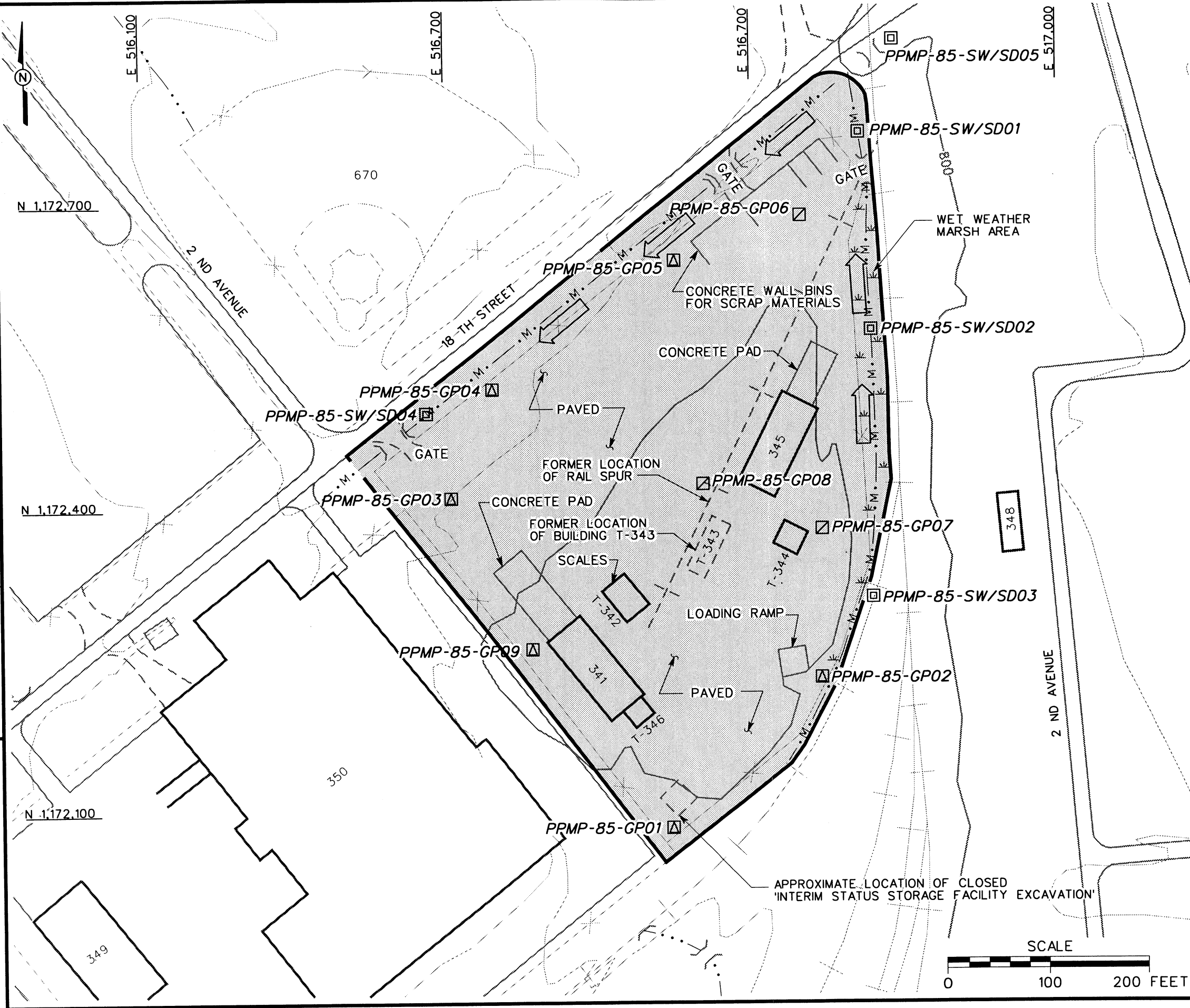
Surface soil samples will be collected from the upper 1 foot of soil by direct-push technology in accordance with the procedures specified in Section 4.7.1.1 of the SAP (IT, 1998a). The collected soil samples will be screened using a photoionization detector (PID) in accordance with Section 4.15 of the SAP. Sample containers, sample volumes, preservatives, and holding times for the analyses required in this SFSP are listed in Section 5.0, Table 5-1 of the QAP. Sample documentation and chain of custody (COC) will be recorded as specified in Section 4.13 of the SAP. The samples will be analyzed for the parameters listed in Section 4.5 of this SFSP.

**Sample Locations And Rationale**  
**DRMO, Parcel 85(7)**  
**Fort McClellan, Calhoun County, Alabama**

Sample Location	Sample Media	Sample Location Rationale
PPMP-85-GP01	Surface soil, subsurface soil, and groundwater	Soil boring for surface and subsurface soil samples and one direct-push temporary well to be placed in south corner of the site near the closed RCRA Interim Status Storage Facility excavation. Sample data will indicate if potential site-specific chemical (PSSC) releases have occurred from historical use of the DRMO Area and if contaminated materials and soil exist in this site.
PPMP-85-GP02	Surface soil, subsurface soil, and groundwater	Soil boring for surface and subsurface soil samples and one direct-push temporary well to be placed in the low area in front (southwest end) of the loading dock in stained area on pavement. Sample data will indicate if PSSC releases have occurred from historical use of the DRMO Area and if contaminated materials and soil exist in this site.
PPMP-85-GP03	Surface soil, subsurface soil, and groundwater	Soil boring for surface and subsurface soil samples and one direct-push temporary well to be placed through pavement in heavy staining downgradient of concrete pad at the north end of Building 341. Sample data will indicate if PSSC releases have occurred from historical use of the DRMO Area and if contaminated materials and soil exist in this site.
PPMP-85-GP04	Surface soil, subsurface soil, and groundwater	Soil boring for surface and subsurface soil samples and one direct-push temporary well to be placed at edge of site through stained pavement, downgradient of the center of the site. Boring is likely downgradient of past location of transformer storage area that was near the entrance. Sample data will indicate if PSSC releases have occurred from historical use of the DRMO Area and if contaminated materials and soil exist in this site.
PPMP-85-GP05	Surface soil, subsurface soil, and groundwater	Soil boring for surface and subsurface soil samples and one direct-push temporary well to be placed at west end of concrete scrap storage bins in heavy surface staining on pavement from drainage along open side (south side) of storage bins. Sample data will indicate if PSSC releases have occurred from historical use of the DRMO Area and if contaminated materials and soil exist in this site.
PPMP-85-GP06	Surface soil and subsurface soil	Soil boring for surface and subsurface soil samples to be placed in front of open side of concrete scrap storage bins in surface drainage stains on pavement. Sample data will indicate if PSSC releases have occurred from historical use of the DRMO Area and if contaminated materials and soil exist in this site.
PPMP-85-GP07	Surface soil and subsurface soil	Soil boring for surface and subsurface soil samples to be placed near Building 344 in heavy staining on pavement, possibly near where past storage of batteries occurred. Sample data will indicate if PSSC releases have occurred from historical use of the DRMO Area and if contaminated materials and soil exist in this site.
PPMP-85-GP08	Surface soil and subsurface soil	Proposed soil boring for surface and subsurface soil samples to be placed in center of site near where old railroad spur was located on north side of Building 345 and previous location of Building 343. Sample data will indicate if PSSC releases have occurred from historical use of the DRMO Area and if contaminated materials and soil exist in this site.
PPMP-85-GP09	Surface soil, subsurface soil, and groundwater	Soil boring for surface and subsurface soil samples and one direct-push temporary well to be placed between the southwest corner of Building 341 and the west fence to determine if PSSC are present from historical use of the DRMO Area.
PPMP-85-SW/SD01	Surface water and sediment	Sample location is in storm drainage on northeast side of the site and is a potential downgradient sink for PSSCs from the site. Evidence of PSSC mobility from within the site would likely be reflected at this location. If no water is present at time of sample collection, a depositional sample will be collected.
PPMP-85-SW/SD02	Surface water and sediment	Sample location is in a wet-weather marsh area along east side of site and is a potential downgradient sink for PSSCs from the site. Evidence of PSSC mobility from within the site would likely be reflected at this location. If no water is present at time of sample collection, a depositional sample will be collected.
PPMP-85-SW/SD03	Surface water and sediment	Sample location is in at the south end of a wet-weather marsh area along east side of site and is a potential downgradient sink for PSSCs from the site. Evidence of PSSC mobility from within the site would likely be reflected at this location. If no water is present at time of sample collection, a depositional sample will be collected.
PPMP-85-SW/SD04	Surface water and sediment	Surface water and sediment will be collected from the drainage ditch near the DRMO main gate for downgradient coverage of the north side of the parcel. Evidence of PSSC mobility from within the site would likely be reflected at this location. Sample collection will be contingent on the presence of water. If no water is present at sample collection time, a depositional soil sample will be collected.
PPMP-85-SW/SD05	Surface water and sediment	Surface water and sediment will be collected from the junction of the east and north drainage ditches for upgradient coverage to determine if PSSC are present. Sample collection will be contingent on the presence of water. If no water is present at sample collection time, a depositional sample will be collected.

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DRAWN BY: D. BILLINGSLEY	DRAWN BY:	ENGR. CHCK. BY: A. MAYILA	PROJ. MGR.: J. YACOB	PROJ. NO.: 774645



**LEGEND**

- UNIMPROVED ROADS AND PARKING
- PAVED ROADS AND PARKING
- BUILDING
- TOPOGRAPHIC CONTOURS
- MARSH / WETLANDS
- PARCEL BOUNDARY
- BRIDGE
- CULVERT WITH HEADWALL
- SURFACE DRAINAGE / CREEK
- MANMADE SURFACE DRAINAGE FEATURE
- FENCE
- RAILROAD
- PROPOSED SURFACE WATER/SEDIMENT SAMPLE
- PROPOSED SURFACE AND SUBSURFACE SOIL SAMPLE
- PROPOSED GROUNDWATER, SURFACE AND SUBSURFACE SOIL SAMPLE
- FLOW DIRECTION

**FIGURE 4-1**  
**PROPOSED SAMPLE LOCATIONS**  
**DRMO AREA,**  
**PARCEL 85(7)**

U. S. ARMY CORPS OF ENGINEERS  
MOBILE DISTRICT  
FORT MCLELLAN  
CALHOUN COUNTY, ALABAMA  
Contract No. DACA21-96-D-0018

**INTERNATIONAL**  
**TECHNOLOGY**  
**CORPORATION**

Table 4-2

**Soil and Sediment Sample Designations and QA/QC Sample Quantities**  
**DRMO Area, Parcel 85(7)**  
**Fort McClellan, Calhoun County, Alabama**

Sample Location	Sample Designation	Sample Matrix	Sample Depth (ft)	QA/QC Samples			Analytical Suite
				Field Duplicates	Field Splits	MS/MSD	
PPMP-85-GP01	PPMP-85-GP01-SS-KN0001-REG	soil	0-1	PPMP-85-GP01-SS-KN0002-FD	PPMP-85-GP01-SS-KN0003-FS		TCL VOCs, TCL SVOCs, TAL Metals, Chlorinated Pesticides, PCBs, Chlorinated Herbicides, Organophosphorus Pesticides
	PPMP-85-GP01-DS-KN0004-REG	soil	a				
PPMP-85-GP02	PPMP-85-GP02-SS-KN0005-REG	soil	0-1			PPMP-85-GP02-SS-KN0005-MS PPMP-85-GP02-SS-KN0005-MSD	TCL VOCs, TCL SVOCs, TAL Metals, Chlorinated Pesticides, PCBs, Chlorinated Herbicides, Organophosphorus Pesticides
	PPMP-85-GP02-DS-KN0006-REG	soil	a				
PPMP-85-GP03	PPMP-85-GP03-SS-KN0007-REG	soil	0-1				TCL VOCs, TCL SVOCs, TAL Metals, Chlorinated Pesticides, PCBs, Chlorinated Herbicides, Organophosphorus Pesticides
	PPMP-85-GP03-DS-KN0008-REG	soil	a				
PPMP-85-GP04	PPMP-85-GP04-SS-KN0009-REG	soil	0-1				TCL VOCs, TCL SVOCs, TAL Metals, Chlorinated Pesticides, PCBs, Chlorinated Herbicides, Organophosphorus Pesticides
	PPMP-85-GP04-DS-KN0010-REG	soil	a				
PPMP-85-GP05	PPMP-85-GP05-SS-KN0011-REG	soil	0-1				TCL VOCs, TCL SVOCs, TAL Metals, Chlorinated Pesticides, PCBs, Chlorinated Herbicides, Organophosphorus Pesticides
	PPMP-85-GP05-DS-KN0012-REG	soil	a				
PPMP-85-GP06	PPMP-85-GP06-SS-KN0013-REG	soil	0-1				TCL VOCs, TCL SVOCs, TAL Metals, Chlorinated Pesticides, PCBs, Chlorinated Herbicides, Organophosphorus Pesticides
	PPMP-85-GP06-DS-KN0014-REG	soil	a				
PPMP-85-GP07	PPMP-85-GP07-SS-KN0015-REG	soil	0-1				TCL VOCs, TCL SVOCs, TAL Metals, Chlorinated Pesticides, PCBs, Chlorinated Herbicides, Organophosphorus Pesticides
	PPMP-85-GP07-DS-KN0016-REG	soil	a				
PPMP-85-GP08	PPMP-85-GP08-SS-KN0017-REG	soil	0-1				TCL VOCs, TCL SVOCs, TAL Metals, Chlorinated Pesticides, PCBs, Chlorinated Herbicides, Organophosphorus Pesticides
	PPMP-85-GP08-DS-KN0018-REG	soil	a				
PPMP-85-GP09	PPMP-85-GP09-SS-KN0019-REG	soil	0-1				TCL VOCs, TCL SVOCs, TAL Metals, Chlorinated Pesticides, PCBs, Chlorinated Herbicides, Organophosphorus Pesticides
	PPMP-85-GP09-DS-KN0020-REG	soil	a				
PPMP-85-SW/SD01	PPMP-85-SW/SD01-SD-KN1001-REG	sediment	0-0.5	PPMP-85-SW/SD01-SD-KN1002-FD	PPMP-85-SW/SD01-SD-KN1003-FS		TCL VOCs, TCL SVOCs, TAL Metals, Chlorinated Pesticides, PCBs, Chlorinated Herbicides, Organophosphorus Pesticides, TOC, and Grain Size
PPMP-85-SW/SD02	PPMP-85-SW/SD02-SD-KN1004-REG	sediment	0-0.5				TCL VOCs, TCL SVOCs, TAL Metals, Chlorinated Pesticides, PCBs, Chlorinated Herbicides, Organophosphorus Pesticides, TOC, and Grain Size
PPMP-85-SW/SD03	PPMP-85-SW/SD03-SD-KN1005-REG	sediment	0-0.5				TCL VOCs, TCL SVOCs, TAL Metals, Chlorinated Pesticides, PCBs, Chlorinated Herbicides, Organophosphorus Pesticides, TOC, and Grain Size
PPMP-85-SW/SD04	PPMP-85-SW/SD04-SD-KN1006-REG	sediment	0-0.5				TCL VOCs, TCL SVOCs, TAL Metals, Chlorinated Pesticides, PCBs, Chlorinated Herbicides, Organophosphorus Pesticides, TOC, and Grain Size
PPMP-85-SW/SD05	PPMP-85-SW/SD05-SD-KN1007-REG	sediment	0-0.5				TCL VOCs, TCL SVOCs, TAL Metals, Chlorinated Pesticides, PCBs, Chlorinated Herbicides, Organophosphorus Pesticides, TOC, and Grain Size

\*Actual sample depth selected for analysis will be at the discretion of the site geologist and will be based on field observation.

QA/QC - Quality assurance/quality control.  
VOC - Volatile organic compound.  
SVOC - Semivolatile organic compound.

REG - Field sample.  
FD - Field duplicate.  
FS - Field split.

TAL - Target analyte list.  
TCL - Target compound list.  
PCB - Polychlorinated biphenyl.

MS/MSD - Matrix spike/matrix spike duplicate.  
TOC - Total organic carbon.



## **4.2.2 Subsurface Soil Sampling**

Subsurface soil samples will be collected from nine soil borings installed at the DRMO Area. These soil borings will be installed in locations as described in Section 4.2.1.1.

### **4.2.2.1 Sample Locations and Rationale**

Subsurface soil samples will be collected from the soil borings proposed on Figure 4-1. The subsurface soil sampling rationale is presented in Table 4-1. Subsurface soil sample designations, depths, and required QA/QC sample quantities are listed in Table 4-2. The exact soil boring sampling locations will be determined in the field by the on-site geologist, based on actual field observations.

### **4.2.2.2 Sample Collection**

Subsurface soil samples will be collected from soil borings at a depth greater than 1 foot bgs in the unsaturated zone. The soil borings will be advanced and soils samples collected using the direct-push sampling procedures specified in Section 4.7.1.1 of the SAP (IT, 1998a).

Sample documentation and COC will be recorded as specified in Section 4.13 of the SAP. Sample containers, sample volumes, preservatives, and holding times for the analyses required in this SFSP are listed in Section 5.0, Table 5-1 of the QAP (IT, 1998a). The samples will be analyzed for the parameters listed in Section 4.5 of this SFSP.

Soil samples will be collected continuously to 12 feet bgs, or until either groundwater or refusal is reached. A detailed lithologic log will be recorded by the on-site geologist for each borehole. At least one subsurface sample from each borehole will be selected for analyses. The collected subsurface soil samples will be field screened using a PID in accordance with Section 4.15 of the SAP to measure samples exhibiting elevated readings above background (ambient air). Typically, the sample showing the highest reading (above background) will be selected and sent to the laboratory for analysis. If none of the samples collected indicate elevated readings above background (ambient air readings) using the PID, the deepest interval collected will be submitted to the laboratory for analysis. Subsurface soil samples will be selected for analyses from any depth interval if the on-site geologist suspects potential PSSCs at the interval. Site conditions such as lithology may also determine the actual sample depth interval submitted for analyses. More than one subsurface soil sample will be collected if field measurements and observations indicate a possible layer of PSSCs and/or additional sample data would provide insight to the existence of any PSSCs.

### **4.2.3 Direct-Push Groundwater Sampling**

Six groundwater samples will be collected from direct-push temporary wells completed in six of the nine borings installed at the DRMO Area.

#### **4.2.3.1 Sample Locations and Rationale**

Groundwater samples will be collected from direct-push temporary wells installed at the site. Groundwater samples will be collected from the locations shown on Figure 4-1. The groundwater sampling rationale is listed in Table 4-1. The groundwater sample designations, depths, and required QA/QC sample quantities are listed in Table 4-3. The exact sampling locations will be determined in the field by the on-site geologist, based on actual field conditions.

#### **4.2.3.2 Sample Collection**

Groundwater samples will be collected in accordance with the procedures and methods specified in Section 4.7.1.1 of the SAP (IT, 1998a). Direct-push temporary wells will be completed at the water table (at a depth where sufficient water is encountered) to collect a groundwater sample.

At direct-push temporary well locations, where either refusal is reached before encountering water or direct-push temporary wells do not yield sufficient groundwater for laboratory analysis, conventional drilling methods will be utilized to install temporary monitoring wells. Temporary monitoring wells will be completed as specified in the addendum to Appendix C of the SAP, Section C.5.7 (IT, 1998c).

Sample documentation and COC will be recorded as specified in Section 4.13 of the SAP. Sample containers, sample volumes, preservatives, and holding times for the analyses required in this SFSP are listed in Section 5.0, Table 5-1 of the QAP (IT, 1998a). The samples will be analyzed for the parameters listed in Section 4.5 of this SFSP.

### **4.2.4 Surface Water Sampling**

Five surface water samples will be collected from the DRMO Area.

#### **4.2.4.1 Sample Locations and Rationale**

The surface water sampling rationale is listed in Table 4-1. The surface water samples will be collected from the locations proposed on Figure 4-1. The surface water sample designations and required QA/QC sample requirements are listed in Table 4-3.

Table 4-3

**Groundwater and Surface Water Sample Designations and QA/QC Sample Quantities**  
**DRMO Area, Parcel 85(7)**  
**Fort McClellan, Calhoun County, Alabama**

Sample Location	Sample Designation	Sample Matrix	Sample Depth (ft)	QA/QC Samples			Analytical Suite
				Field Duplicates	Field Splits	MS/MSD	
PPMP-85-GP01	PPMP-85-GP01-GW-KN3001-REG	Groundwater	a	PPMP-85-GP01-GW-KN3002-FD	PPMP-85-GP01-GW-KN3003-FS		TCL VOCs, TCL SVOCs, TAL Metals, Chlorinated Pesticides, PCBs, Chlorinated Herbicides, Organophosphorus Pesticides
PPMP-85-GP02	PPMP-85-GP02-GW-KN3004-REG	Groundwater	a				TCL VOCs, TCL SVOCs, TAL Metals, Chlorinated Pesticides, PCBs, Chlorinated Herbicides, Organophosphorus Pesticides
PPMP-85-GP03	PPMP-85-GP03-GW-KN3005-REG	Groundwater	a				TCL VOCs, TCL SVOCs, TAL Metals, Chlorinated Pesticides, PCBs, Chlorinated Herbicides, Organophosphorus Pesticides
PPMP-85-GP04	PPMP-85-GP04-GW-KN3006-REG	Groundwater	a				TCL VOCs, TCL SVOCs, TAL Metals, Chlorinated Pesticides, PCBs, Chlorinated Herbicides, Organophosphorus Pesticides
PPMP-85-GP05	PPMP-85-GP05-GW-KN3007-REG	Groundwater	a				TCL VOCs, TCL SVOCs, TAL Metals, Chlorinated Pesticides, PCBs, Chlorinated Herbicides, Organophosphorus Pesticides
PPMP-85-GP09	PPMP-85-GP09-GW-KN3008-REG	Groundwater	a				TCL VOCs, TCL SVOCs, TAL Metals, Chlorinated Pesticides, PCBs, Chlorinated Herbicides, Organophosphorus Pesticides
PPMP-85-SW/SDO1	PPMP-85-SW/SDO1-SW-KN2001-REG	Surface water	N/A				TCL VOCs, TCL SVOCs, TAL Metals, Chlorinated Pesticides, PCBs, Chlorinated Herbicides, Organophosphorus Pesticides
PPMP-85-SW/SDO2	PPMP-85-SW/SDO2-SW-KN2002-REG	Surface water	N/A			PPMP-85-SW/SDO2-SW-KN2002-MS PPMP-85-SW/SDO2-SW-KN2002-MSD	TCL VOCs, TCL SVOCs, TAL Metals, Chlorinated Pesticides, PCBs, Chlorinated Herbicides, Organophosphorus Pesticides
PPMP-85-SW/SDO3	PPMP-85-SW/SDO3-SW-KN2003-REG	Surface water	N/A				TCL VOCs, TCL SVOCs, TAL Metals, Chlorinated Pesticides, PCBs, Chlorinated Herbicides, Organophosphorus Pesticides
PPMP-85-SW/SDO4	PPMP-85-SW/SDO4-SW-KN2004-REG	Surface water	N/A				TCL VOCs, TCL SVOCs, TAL Metals, Chlorinated Pesticides, PCBs, Chlorinated Herbicides, Organophosphorus Pesticides
PPMP-85-SW/SDO5	PPMP-85-SW/SDO5-SW-KN2005-REG	Surface water	N/A				TCL VOCs, TCL SVOCs, TAL Metals, Chlorinated Pesticides, PCBs, Chlorinated Herbicides, Organophosphorus Pesticides

\*Sample depth will depend on where sufficient first water is encountered to collect a water sample.

QA/QC - Quality assurance/quality control.  
VOC - Volatile organic compound.  
SVOC - Semivolatile organic compound.

TAL - Target analyte list.  
TCL - Target compound list.  
PCB - Polychlorinated biphenyl.

REG - Field sample.  
FD - Field duplicate.  
FS - Field split.

MS/MSD - Matrix spike/matrix spike duplicate.  
N/A - Not applicable.

#### **4.2.4.2 Sample Collection**

Surface water samples will be collected in accordance with the procedures specified in Section 4.9.1.3 of the SAP (IT, 1998a). Sample documentation and COC will be recorded as specified in Section 4.13 of the SAP. Sample containers, sample volumes, preservatives, and holding times for the analyses required in this SFSP are listed in Section 5.0, Table 5-1, of the QAP (IT, 1998a). The samples will be analyzed for the parameters listed in Section 4.5 of this SFSP.

#### **4.2.5 Sediment Sampling**

Five sediment samples will be collected from the DRMO Area. The sediment samples will be collected at the same locations as the surface water samples described in Section 4.2.4.

##### **4.2.5.1 Sample Locations and Rationale**

The location for the sediment samples is shown in Figure 4-1. Sediment sampling rationale is presented in Table 4-1. Sediment sample designations and required QA/QC sample requirements are listed in Table 4-3.

##### **4.2.5.2 Sample Collection**

Sediment samples will be collected in accordance with the procedures specified in Section 4.9.1.2 of the SAP (IT, 1998a). Sample documentation and COC will be recorded as specified in Section 4.13 of the SAP. The sediment samples will be analyzed for the parameters listed in Section 4.5 of this SFSP.

#### **4.3 Decontamination Requirements**

Decontamination will be performed on sampling and nonsampling equipment to prevent cross-contamination between sampling locations. Decontamination of sampling equipment will be performed in accordance with the requirements presented in Section 4.10.1.1 of the SAP (IT, 1998a). Decontamination of nonsampling equipment will be performed in accordance with the requirements presented in Section 4.10.1.2 of the SAP (IT, 1998a).

#### **4.4 Surveying of Sample Locations**

Sampling locations will be marked with pin flags, stakes, and/or flagging, and will be surveyed using either global positioning system (GPS) or conventional civil survey techniques, as necessary to obtain the required level of accuracy. Horizontal coordinates will be referenced to the Alabama State Plane Coordinate System, 1983 North American Datum (NAD83). Elevations

will be referenced to the National Geodetic Vertical Datum of 1929 or the North American Vertical Datum of 1988 (soon to be established on site).

Horizontal coordinates for the sample locations will be recorded using a GPS to provide accuracy within 1 meter. Because of the need to use temporary wells to determine water levels, a higher level of accuracy is required. Temporary wells and permanent monitoring well locations will be surveyed to an accuracy of 0.1 foot for horizontal coordinates and 0.01 foot for elevations, using survey-grade GPS techniques and/or conventional civil survey techniques, as required. Procedures to be used for GPS surveying are described in Section 4.3 of the SAP (IT, 1998a). Conventional land survey requirements are presented in Section 4.19 of the SAP.

#### **4.5 Analytical Program**

Samples collected at locations specified in this chapter will be analyzed for the specific suites of chemicals and elements based on the history of site usage, as well as EPA, ADEM, FTMC, and USACE requirements. Target analyses for samples collected from the DRMO Area consist of the following analytical suites:

- Target Compound List Volatile Organic Compounds - Method 5035/8260B
- Target Compound List Semivolatile Organic Compounds - Method 8270C
- Target Analyte List Metals - Method 6010B/7000
- Chlorinated Pesticides - Method 8081A
- Polychlorinated Biphenyls - Method 8082
- Chlorinated Herbicides - Method 8051A
- Organophosphorus Pesticides - Method 8141A.

In addition, the sediment samples will be analyzed for the following parameters:

- Total organic carbon – Method 9060
- Grain size – ASTM D-421/D-422.

The samples will be analyzed using EPA SW-846 methods, including Update III Methods where applicable, as presented in Table 4-4 in this SFSP and Table 6-1 in the QAP (IT, 1998a). Data will be reported and evaluated in accordance with CESAS Level B criteria (USACE, 1994) and the stipulated requirements for the generation of definitive data (Section 3.1.2 of the QAP). Chemical data will be reported via hard copy data packages by the laboratory using CLP-like forms. These packages will be validated in accordance with EPA National Functional Guidelines by Level III criteria.

**Analytical Samples  
Site Investigation  
DRMO AREA, Parcel 85(7)  
Fort McClellan, Calhoun County, Alabama**

Parameters	Analysis Method	Sample Matrix	TAT Needed	Field Samples			QA/QC Samples <sup>a</sup>					Quanterra	QA Lab
				No. of Sample Points	No. of Events	No. of Field Samples	Field Dups (10%)	Splits w/ QA Lab (5%)	MS/MSD (5%)	Trip Blank (1/ship)	Eq. Rinse (1/wk/matrix)	Total No. Analysis	Total No. Analysis
DRMO Area: 11 water matrix samples (6 groundwater samples and 5 surface water samples); 23 soil matrix samples (9 surface soil samples, 9 subsurface soil samples, and 5 sediment samples)													
TCL VOCs	8260B	water	normal	11	1	11	1	1	1	2	1	17	1
TCL SVOCs	8270C	water	normal	11	1	11	1	1	1		1	15	1
CI Pesticides	8081A	water	normal	11	1	11	1	1	1		1	15	1
PCBs	8082	water	normal	11	1	11	1	1	1		1	15	1
OP Pesticides	8141A	water	normal	11	1	11	1	1	1		1	15	1
CI Herbicides	8151A	water	normal	11	1	11	1	1	1		1	15	1
Tot TAL Metals	6010B/7000	water	normal	11	1	11	1	1	1		1	15	1
TCL VOCs	8260B	soil	normal	23	1	23	2	2	1		1	28	2
TCL SVOCs	8270C	soil	normal	23	1	23	2	2	1		1	28	2
CI Pesticides	8081A	soil	normal	23	1	23	2	2	1		1	28	2
PCBs	8082	soil	normal	23	1	23	2	2	1		1	28	2
OP Pesticides	8141A	soil	normal	23	1	23	2	2	1		1	28	2
CI Herbicides	8151A	soil	normal	23	1	23	2	2	1		1	28	2
TAL Metals	6010B/7000	soil	normal	23	1	23	2	2	1		1	28	2
TOC	9060	sediment	normal	3	1	3						3	0
Grain Size	ASTM D-421/D-422	sediment	normal	3	1	3						3	0
DRMO Area Subtotal:						244	21	21	14	2	14	309	21

<sup>a</sup>Field duplicate, QA split, and MS/MSD samples were calculated as a percentage of the field samples collected per site and were rounded to the nearest whole number. Trip blank samples will be collected in association with water matrix samples for VOC analysis only. Assumed four field samples per day to estimate trip blanks. Equipment blanks will be collected once per event whenever sampling equipment is field decontaminated and re-used. They will be repeated weekly for sampling events that are anticipated to last more than 1 week. Assumed 20 field samples will be collected per week to estimate number of equipment blanks.

Ship samples to:

Quanterra Environmental Services  
5815 Middlebrook Pike  
Knoxville, Tennessee 37921  
Attn: John Reynolds  
Tel: 423-588-6401  
Fax: 423-584-4315

USACE Laboratory split samples  
are shipped to:

USACE South Atlantic Division Laboratory  
Attn: Sample Receiving  
611 South Cobb Drive  
Marietta, Georgia 30060-3112  
Tel: 770-919-5270

QA/QC - Quality assurance/quality control.  
MS/MSD - Matrix spike/matrix spike duplicate.  
VOC - Volatile organic compound.  
SVOC - Semivolatile organic compound.

TAL - Target analyte list.  
Pest - Pesticide.  
CI - Chlorinated.  
OP - Organophosphorus.

TOC - Total organic carbon.  
CA - Chemical agent.  
TCL - Target compound list.  
PCB - Polychlorinated biphenyl.

#### ***4.6 Sample Preservation, Packaging, and Shipping***

Sample preservation, packaging, and shipping will follow the procedures specified in Section 4.13.2 of the SAP (IT, 1998a). Completed analysis request/COC records will be secured and included with each shipment of coolers to the following subcontract laboratory.

Sample Receiving  
Quanterra Environmental Services  
5815 Middlebrook Pike  
Knoxville, Tennessee 37921  
Telephone: (423) 588-6401.

Split samples collected for the USACE laboratory will be shipped to the following address:

USACE South Atlantic Division Laboratory  
Attn: Sample Receiving  
611 South Cobb Drive  
Marietta, Georgia 30060  
Telephone: (770) 919-5270.

#### ***4.7 Investigation-Derived Waste Management***

Management and disposal of the investigation-derived wastes (IDW) will follow procedures and requirements as described in Appendix D of the SAP (IT, 1998a). The IDW expected to be generated at the DRMO Area will include decontamination fluids and disposable personal protective equipment. The IDW will be staged in the fenced area around Buildings 335 and 336 while awaiting final disposal.

#### ***4.8 Site-Specific Safety and Health***

Safety and health requirements for this SI are provided in the SSHP attachment for the DRMO Area, Parcel 85(7). The SSHP attachment will be used in conjunction with the SHP.

## ***5.0 Project Schedule***

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The project schedule for the SI activities will be provided by the IT project manager to the Base Realignment and Closure Cleanup Team on a monthly basis.



## 6.0 References

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Environmental Science and Engineering Inc. (ESE), 1998, *Final Environmental Baseline Survey, Fort McClellan, Alabama*, prepared for U.S. Army Environmental Center, Aberdeen Proving Ground, Maryland, January.

Fort McClellan (FTMC), 1997, *Fort McClellan Comprehensive Reuse Plan*, prepared under contract to the Calhoun County Commission, November.

IT Corporation (IT), 1998a, *Final Installation-Wide Sampling and Analysis Plan, Fort McClellan, Calhoun County, Alabama*, August.

IT Corporation (IT), 1998b, *Final Installation-Wide Work Plan, Fort McClellan, Calhoun County, Alabama*, August.

IT Corporation (IT), 1998c, Letter to Ellis Pope from Jeanne Yacoub, "Procedures for Temporary Residuum Monitoring Well Installation, Conversion, and Abandonment," November.

U.S. Army Corps of Engineers (USACE), 1998, *Statement of Work for Task Order CK005, Modification No. 1, Site Investigations at Fort McClellan, Alabama, Including Ecological Screening Sites (Creeks and Tribes), and Removal of Indoor Firing Ranges*, May.

U.S. Army Corps of Engineers (USACE), 1994, *Requirements for the Preparation of Sampling and Analysis Plans*, Engineer Manual EM 200-1-3, September 1.

U.S. Army Environmental Hygiene Agency (USAEHA), 1986, *Hazardous Waste Consultant No. 37-26-1649-88, Fort McClellan, Alabama, 8-12 December 1986*, Aberdeen Proving Ground, Maryland.

U.S. Department of Agriculture (USDA), 1961, *Soil Survey, Calhoun County, Alabama*, Soil Conservation Service, Series 1958, No. 9, September.

U.S. Environmental Protection Agency (EPA), 1993, *Data Quality Objectives Process for Superfund, Interim Final Guidance*, EPA 540-R-93-071, September.

Weston, Roy F., Inc. (Weston), 1990, *Final USATHAMA Task Order 11, Enhanced Preliminary Assessment, Fort McClellan, Anniston, Alabama*, prepared for U.S. Army Toxic and Hazardous Materials Agency, Aberdeen Proving Ground, Maryland, December.

## **APPENDIX A**

### **ANALYTICAL RESULTS OF SAMPLE (AREA "A") ANALYSIS**



ANALYTICAL SERVICES, INC.

1004 OSTER DR., SUITE 1 • HUNTSVILLE, ALABAMA 35816 • 205 • 536-8110

Tue May 8 1990

# Laboratory Report

Client: Terra First, Inc.  
P.O. Box 1249  
Vernon, AL 35592

Attn: Timmy Trimm

Sample ID: Sample Area "A"  
Date Received: 05/01/1990

Lab. No 2012-1210-01

Parameter	Results	Method	Analyst	Date	Time
Arsenic (EP)	< 20 ppm	6010	rg	05-03-90	1030
Barium (EP)	< 50 ppm	6010	rg	05-03-90	1030
Cadmium (EP)	< 1.0 ppm	6010	rg	05-03-90	1030
Chromium (EP)	< 2.0 ppm	6010	rg	05-03-90	1030
Lead (EP)	< 2.0 ppm	6010	rg	05-03-90	1030
Mercury (EP)	< 0.1 ppm	6010	rg	05-03-90	1030
Selenium (EP)	< 0.5 ppm	6010	rg	05-03-90	1030
Silver (EP)	< 2.0 ppm	6010	tt	05-03-90	1010
Reactivity	Not Reactive	6010, 6030	gj	05-08-90	1000
Cyanide (T)	< 0.5 ppm	412 D	gj	05-08-90	1000
Corrosivity	Not Corrosive	2040	rg	05-02-90	0500
Ignitability	Not Ignitable	1010	mg	05-05-90	1300

## Method Sources

EPA-Test Methods for Evaluating Solid Waste, SW-846  
EPA-Methods for Chemical Analysis of Water and Wastes (1983)  
Standard Methods for the Examination of Water and Wastes-  
water, 16th Ed.  
40 CFR Part 136

Initials: gg-G Graves, rc-Crowder, rg-Gilbert, ep-Parks, bg-B Graves,  
cc-Cochrane, mg-Gross, rr-Rostohar, kj-Jones, gj-Johnson,  
tt-Taggart, km-Medlock, sw-West, we-White-Epperson

Respectfully submitted,

Guy E. Graves, Ph.D.  
Vice President



VOLATILE COMPOUNDS  
GC/MS Report

Client: Terra First  
Sample Description: Area "A"  
Matrix: Soil

Laboratory No: 2012-1210-01  
Date Received: 5/1/90  
Date Analyzed: 05/03/90

Compounds	MDL1 PPB	Conc2 PPB	Compounds	MDL1 PPB	Conc2 PPB
Chloromethane	10	BMDL	trans-1,2-Dichloroethene	5	BMDL
Bromomethane	10	BMDL	Trichloroethene	5	BMDL
Vinyl Chloride	10	BMDL	Dibromochloromethane	5	BMDL
* Chloroethane	10	BMDL	1,1,2-Trichloroethane	5	BMDL
Methylene Chloride	5	14	Benzene	5	BMDL
2-Propanone (Acetone)	100	*	2-Chloroethylvinylether	5	ND
Carbon Disulfide	5	BMDL	cis-1,3-Dichloropropene	10	BMDL
1,1-Dichloroethene	5	BMDL	Bromoform	5	BMDL
1,1-Dichloroethane	5	BMDL	2-Hexanone	50	BMDL
trans-1,2-Dichloroethene	5	BMDL	4-Methyl-2-pentanone	50	BMDL
Chloroform	5	BMDL	Tetrachloroethene	5	BMDL
1,2-Dichloroethane	5	BMDL	1,1,2,2-Tetrachloroethane	5	BMDL
2-Butanone (MEK)	100	BMDL	Toluene	5	BMDL
1,1,1-Trichloroethane	5	BMDL	Chlorobenzene	5	BMDL
Carbon Tetrachloride	5	BMDL	Ethylbenzene	5	BMDL
Vinyl Acetate	50	BMDL	Total Xylenes	5	BMDL
Bromodichloromethane	5	BMDL	Styrene	5	BMDL
1,2-Dichloropropane	5	BMDL			
			OTHER COMPOUNDS: **		
SURROGATE RECOVERIES			1 MDL= Method Detection Limit		
D4-1,2-Dichloroethane	107		2 BMDL= Below Method Detection Limit		
D8-Toluene	95		3 ND= Not Determined		
1,4-Dibromofluorobenzene	92				
					REVIEW

Comments: \* Presence indicated, but less than method detection limit.  
\*\* Tentatively identified and quantitatively estimated.



BASE/NEUTRAL COMPOUNDS  
GC/MS Report

Client: Terra First, Inc.  
Sample Description: Area "A"  
Matrix: Soil

Laboratory No: 2012-1210-01  
Date Received: 5/1/89  
Date Extracted: 5/2/90  
Date Analyzed: 05/02/90

Compounds	MDL1 PPB	Conc2 PPB	Compounds	MDL1 PPB	Conc2 PPB
Bis(2-chloroethyl)ether	325	BMDL	4-Chlorophenyl phenyl ether	325	BMDL
1,3-Dichlorobenzene	325	BMDL	Fluorene	325	BMDL
1,2-Dichlorobenzene	325	BMDL	4-Bromophenyl ether	325	BMDL
1,4-Dichlorobenzene	325	BMDL	Hexachlorobenzene	325	BMDL
Bis(2-chloroisopropyl) ether	325	BMDL	Phenanthrene	325	BMDL
N-Nitrosodi-n-propy- lamine	325	BMDL	Anthracene	325	BMDL
Hexachloroethane	325	BMDL	Dibutyl phthalate	325	BMDL
Nitrobenzene	325	BMDL	Fluoranthene	325	BMDL
Isophorone	325	BMDL	Pyrene	325	BMDL
Bis(2-chloroethoxy) methane	325	BMDL	Butylbenzyl phthalate	325	BMDL
1,2,4-Trichlorobenzene	325	BMDL	3,3'-Dichlorobenzidine		NA
Naphthalene	325	BMDL	Benzo(a)anthracene	325	BMDL
Hexachlorobutadiene	325	BMDL	Chrysene	325	BMDL
2-Chloronaphthalene	325	BMDL	Bis(2-ethylhexyl)phtha- late	325	*
Dimethyl phthalate	325	BMDL	Di-n-octyl phthalate	325	BMDL
2,6-Dinitrotoluene	325	BMDL	Benzo(b)fluoranthene	325	BMDL
Acenaphthylene	325	BMDL	Benzo(k)fluoranthene	325	BMDL
Acenaphthene	325	BMDL	Benzo(a)pyrene	325	BMDL
2,4-Dinitrotoluene	325	BMDL	Indeno(1,2,3-cd)pyrene	325	BMDL
Diethyl phthalate	325	BMDL	Dibenzo(a,h)anthracene	325	BMDL
Benzidine		NA	Benzo(g,h,i)perylene	325	BMDL
			OTHER COMPOUNDS:**		
SURROGATE RECOVERIES			1 MDL=Method Detection Limit		
			2 BMDL=Below Method Detection Limit		
			3 ND= Not Determined		
Nitrobenzene-D5			REVIEW		
2-Fluorobiphenyl					
Terphenyl-d14					

Comments: \* Presence indicated, but less than method detection limit.  
\*\* Tentatively identified and quantitatively estimated.



ACID COMPOUNDS  
GC/MS Report

Client: Terra First, Inc.  
Sample Description: Area "A"  
Matrix: Soil

Laboratory No: 2012-1210-01  
Date Received: 5/1/89  
Date Extracted: 5/2/90  
Date Analyzed: 05/02/90

Compounds	MDL1 PPB	Conc2 PPB	Compounds	MDL1 PPB	Conc2 PPB
Phenol	325	BMDL			
2-Chlorophenol	325	BMDL			
2-Nitrophenol	325	BMDL			
2,4-Dimethylphenol	325	BMDL			
2,4-Dichlorophenol	325	BMDL			
4-Chloro-3-Methylphenol	325	BMDL			
2,4,6-Trichlorophenol	325	BMDL			
2,4-Dinitrophenol	1625	BMDL			
4-Nitrophenol	1625	BMDL			
2-Methyl-4,6-Dinitro- phenol	1625	BMDL			
Pentachlorophenol	1625	BMDL			
OTHER COMPOUNDS:**					
SURROGATE RECOVERIES			1 MDL= Method Detection Limit		
Phenol-d5	61		2 BMDL= Below Method Detection Limit		
2-Fluorophenol	48		3 ND= Not Determined		
2,4,6-Tribromophenol	86		REVIEW		

Comments: \* Presence indicated, but less than method detection limit.  
\*\* Tentatively identified and quantitatively estimated.



## ORGANOCHLORINE PESTICIDES AND AROCHLORS

## GC/ECD REPORT

Client: Terra First

Client Identification: Sample Area 'A'

Matrix: Soil

Laboratory No: 2012-1210-01

Date Received: 5-1-90

Date Analyzed: 5-4-90

No.	COMPOUND NAME	PQL* (ug/Kg)	CONCENTRATION (ug/Kg)	CONFIRMED (Column)
1	Aldrin	1.400	< PQL	N/A
2	alpha - BHC	1.400	< PQL	N/A
3	beta - BHC	3.150	< PQL	N/A
4	delta - BHC	1.400	< PQL	N/A
5	gamma - BHC(Lindane)	1.400	< PQL	N/A
6	4,4'-DDD	2.100	< PQL	N/A
7	4,4'-DDE	1.750	< PQL	N/A
8	4,4'-DDT	2.100	< PQL	N/A
9	Dieldrin	1.750	< PQL	N/A
10	Endosulfan I	1.400	< PQL	N/A
11	Endosulfan II	2.100	< PQL	N/A
12	Endosulfan Sulfate	2.100	< PQL	N/A
13	Endrin	2.100	< PQL	N/A
14	Endrin Aldehyde	2.800	< PQL	N/A
15	Heptachlor	2.800	< PQL	N/A
16	Heptachlor Epoxide	1.400	< PQL	N/A
17	Methoxychlor	3.500	< PQL	N/A
18	Methyl Parathion	4.550	< PQL	N/A
19	Parathion	5.600	< PQL	N/A
20	Chlordane	8.750	< PQL	N/A
21	Toxaphene	278.0	< PQL	N/A
22	Arochlor - 1016	250.0	< PQL	N/A
23	Arochlor - 1221	250.0	< PQL	N/A
24	Arochlor - 1232	250.0	< PQL	N/A
25	Arochlor - 1242	250.0	< PQL	N/A
26	Arochlor - 1248	250.0	< PQL	N/A
27	Arochlor - 1254	250.0	< PQL	N/A
28	Arochlor - 1260	250.0	< PQL	N/A

\* - PQL = Practical Quantitation Limit (ug/Kg)

Reviewed by 



CHLORINATED HERBICIDES  
METHOD 8150  
GC/ECD REPORT

Client: Terra First  
Client Identification: Sample Area 'A'  
Matrix: Water (1000mL extracted)

Laboratory No: 2012-1210-  
Date Received: 5-1-90  
Date Analyzed: 5-7-90

No.	COMPOUND NAME	PQL* (ug/L)	CONCENTRATION (ug/L)	CONFIRMED (Column)
1	Dicamba	0.02	<PQL	N/A
2	2,4-D	0.02	<PQL	N/A
3	2,4,5-TP(Silvex)	0.02	<PQL	N/A
4	2,4,5-T	0.02	<PQL	N/A
5	2,4-DB	0.02	<PQL	N/A
6	Dalapon	0.02	<PQL	N/A
7	MCPP	2.00	<PQL	N/A
8	MCPA	2.00	<PQL	N/A
9	Dichloroprop	0.02	<PQL	N/A
10	Dinoseb	0.02	<PQL	N/A
11	Pentachlorophenol	0.02	<PQL	N/A
12	Picloram	0.02	<PQL	N/A

\* - PQL = Practical Quantitation Limit

Reviewed by D E J



**Site Investigation**  
**Final**  
**Site-Specific Field Sampling Plan Attachment**  
**for the Fill Area North of Landfill No. 2, Parcel 230(7)**

**Fort McClellan**  
**Calhoun County, Alabama**

**Prepared for:**

**U.S. Army Corps of Engineers, Mobile District**  
**109 St. Joseph Street**  
**Mobile, Alabama 36602**

**Prepared by:**

**IT Corporation**  
**312 Directors Drive**  
**Knoxville, Tennessee 37923**

**Delivery Order CK005**  
**Contract No. DACA21-96-D-0018**  
**IT Project No. 774645**

**December 1998**

**Revision 1**

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## ***List of Acronyms***

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ADEM	Alabama Department of Environmental Management
bgs	below ground surface
CLP	Contract Laboratory Program
CERFA	Community Environmental Response Facilitation Act
CESAS	Corps of Engineers South Atlantic Savannah
COC	chain of custody
CSEM	conceptual site exposure model
DOD	U.S. Department of Defense
DQO	data quality objective
E-W	east to west
EBS	environmental baseline survey
EM	electromagnetic
EPA	U.S. Environmental Protection Agency
ESE	Environmental Science and Engineering, Inc.
FTMC	Fort McClellan
GPR	ground-penetrating radar
GPS	global positioning system
IDW	investigation-derived waste
IT	IT Corporation
N-S	north to south
PID	photoionization detector
PSSC	potential site-specific chemical
QA/QC	quality assurance/quality control
QAP	installation-wide quality assurance plan
SAP	installation-wide sampling and analysis plan
SFSP	site-specific field sampling plan
SI	site investigation
SSHP	site-specific safety and health plan
USACE	U.S. Army Corps of Engineers
WP	installation-wide work plan
USDA	U.S. Department of Agriculture
UST	underground storage tank

## ***Executive Summary***

---

In accordance with Contract No. DACA21-96-D-0018, Delivery Order CK005, IT Corporation (IT) will conduct site investigation activities at the Fill Area North of Landfill No. 2, Parcel 230(7), at Fort McClellan, Calhoun County, Alabama, to determine the presence or absence of potential site-specific chemicals (PSSC) at this site. The purpose of this site-specific field sampling plan (SFSP) is to provide technical guidance for sampling activities at the Fill Area North of Landfill No. 2, Parcel 230(7). This site is located in the northeastern area of the FTMC Main Post. Parcel 230(7) is located a short distance north of Landfill No.2 and northeast of the Ammunition Supply Point. It is located immediately east of an unimproved road extending north from the Chemical Defense Training Facility access road. Cave Creek flows to the south along the western edge of this site. This fill area consists of a dump site where rusted drum parts, other metal, and construction and demolition debris have been observed. Documentation available regarding the type of material placed at this location is not available.

Specifically, IT will perform a geophysical survey to determine the location and extent of the fill area. Also, IT will collect seven surface soil samples, seven subsurface soil samples, three groundwater samples, three surface water samples, three sediment samples, three seep water samples, and three depositional soil samples at this site. Contaminant sources at the site are basically unknown. Because the site is a potential military dump site, chemical analyses of the samples collected during the field program will include volatile organic compounds, semivolatile organic compounds, metals, chlorinated pesticides, polychlorinated biphenyls, chlorinated herbicides, organophosphorus pesticides, and nitroexplosives. Results from these analyses will be compared with site-specific screening levels as specified in the installation-wide work plan (WP) and regulatory agency contaminant guidelines.

This SFSP attachment to the installation-wide sampling and analysis plan (SAP) for the Fill Area North of Landfill No. 2, Parcel 230(7) will be used in conjunction with the site-specific safety and health plan (SSHP), and the WP and SAP. The SAP includes the installation-wide safety and health plan, waste management plan, and quality assurance plan. Site-specific hazard analyses are included in the SSHP.

## ***1.0 Project Description***

---

### ***1.1 Introduction***

The U.S. Army is conducting studies of the environmental impact of suspected contaminants at Fort McClellan (FTMC) in Calhoun County, Alabama, under the management of the U.S. Army Corps of Engineers (USACE)-Mobile District. The USACE has contracted IT Corporation (IT) to provide environmental services for the site investigation (SI) of the Fill Area North of Landfill No. 2, Parcel 230(7) under Delivery Order CK005, Contract No. DACA21-96-D-0018.

This site-specific field sampling plan (SFSP) attachment to the installation-wide sampling and analysis plan (SAP) (IT, 1998a) for FTMC has been prepared to provide technical guidance for sample collection and analysis at the Fill Area North of Landfill No. 2, Parcel 230(7). This SFSP will be used in conjunction with the site-specific safety and health plan (SSHP) developed for the Fill Area North of Landfill No. 2, Parcel 230(7), and the installation-wide work plan (WP) (IT, 1998b) and SAP. The SAP includes the installation-wide safety and health plan (SHP), waste management plan, and quality assurance plan (QAP).

### ***1.2 Site Description***

The Fill Area North of Landfill No. 2, Parcel 230(7) is located in the northeastern area of the FTMC Main Post (Figure 1-1). Parcel 230(7) is located a short distance north of Landfill No. 2 and northeast of the Ammunition Supply Point (Figure 1-2). Parcel 230(7) is also known as the Fill Area North of the Ammunition Supply Point. It is located immediately east of an unimproved road extending north from the Chemical Defense Training Facility access road. This site is identified from a ground scar on the 1961 aerial photo composite (Environmental Science and Engineering, Inc. [ESE], 1998). This fill area consists of an area where rusted drum parts, other metal, and construction and demolition debris have been observed. It appears that materials were dumped down the slope to the east from the unimproved road toward Cave Creek.

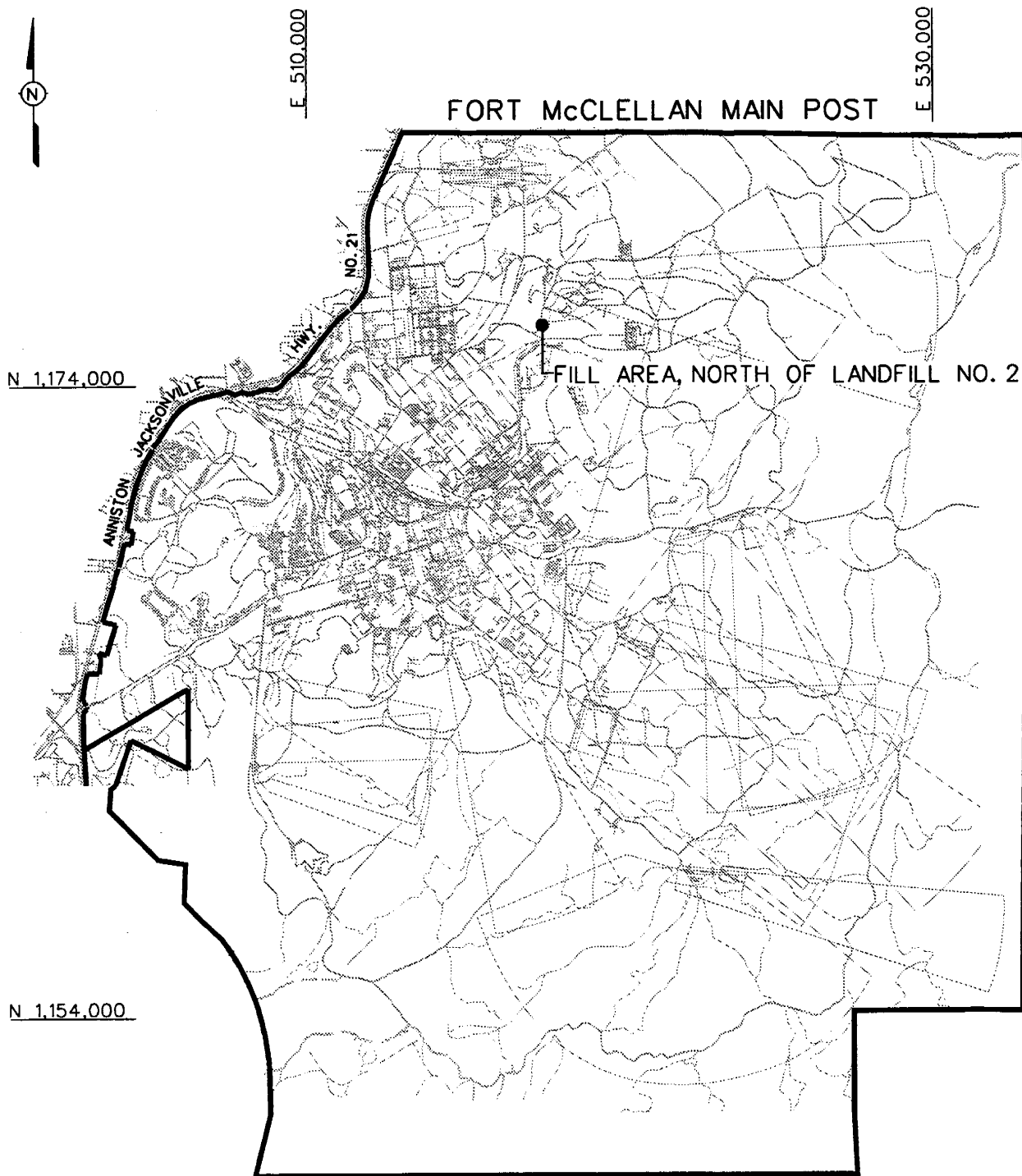
The site is now overgrown with vegetation and has large trees growing between the base of the slope on the east side of the site and Cave Creek. Seeps were not observed during the IT June 1998 site visit; however, they were reported to be along the east side of the site at the base of the slope that runs north and south. Documentation is not available regarding the type of material placed at this location.

The fill area comprises almost 3 acres and has a slope of 20 to 25 feet running north and south through the center part of the site. The site elevation ranges from approximately 830 feet at the

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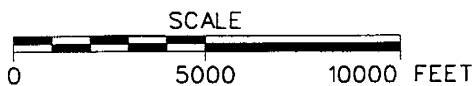
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# LEGEND:



FORT McCLELLAN BOUNDARY



## FIGURE 1-1

### SITE LOCATION MAP

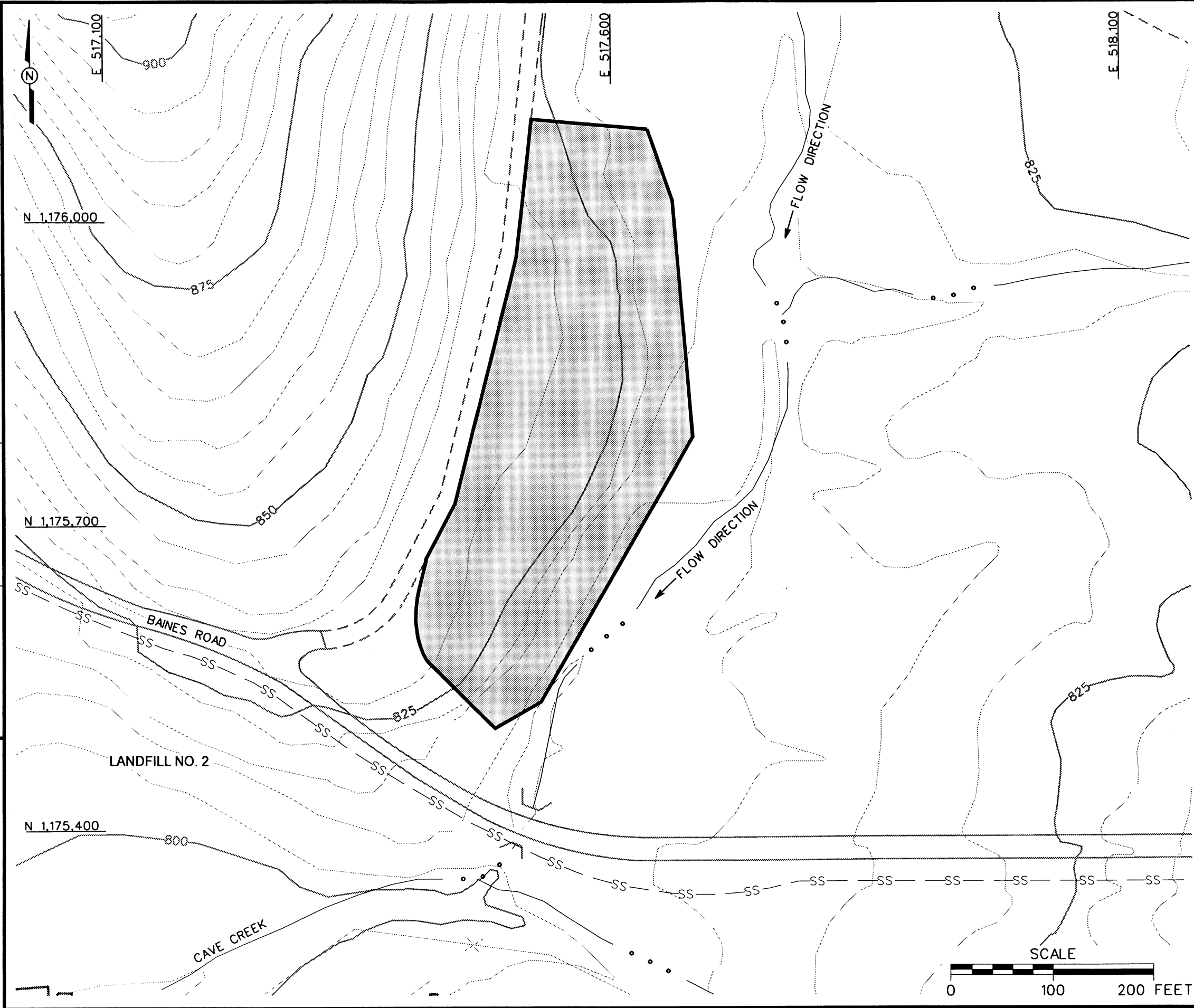
FILL AREA, NORTH OF LANDFILL NO. 2  
PARCEL 230(7)

U. S. ARMY CORPS OF ENGINEERS  
MOBILE DISTRICT  
FORT McCLELLAN  
CALHOUN COUNTY, ALABAMA  
Contract No. DACA21-96-D-0018



INTERNATIONAL  
TECHNOLOGY  
CORPORATION





**LEGEND**

- UNIMPROVED ROADS AND PARKING
- PAVED ROADS AND PARKING
- BUILDING
- TOPOGRAPHIC CONTOURS
- PARCEL BOUNDARY
- BRIDGE
- CULVERT WITH HEADWALL
- SURFACE DRAINAGE
- FENCE

**FIGURE 1-2**  
**SITE MAP**  
**FILL AREA, NORTH OF LANDFILL NO. 2**  
**PARCEL 230(7)**  
  
U. S. ARMY CORPS OF ENGINEERS  
MOBILE DISTRICT  
FORT McCLELLAN  
CALHOUN COUNTY, ALABAMA  
Contract No. DACA21-96-D-0018  
  
 INTERNATIONAL  
TECHNOLOGY  
CORPORATION

top of the fill area near the unimproved road to approximately 805 feet near Cave Creek. Shallow groundwater direction at the site is probably controlled by topography and probably flows to the east because of its proximity to Cave Creek.

The soils at this site are of the Atkins series and consist of poorly drained, strongly acid soils that are developing in general alluvium (U.S. Department of Agriculture [USDA], 1961). This parent material has washed mainly from soils underlain by sandstone and shale. The Atkins surface soils are dark grayish-brown, mottled silt loam. The subsoils are light brownish-gray to light olive-gray, mottled silt loam or clay loam. The Atkins soils occur mainly in small, narrow bands in flood plains along streams in Calhoun County. The depth to bedrock typically ranges from 2 to 6 feet below ground surface (bgs). The depth to the water table for this series is usually near the ground surface. Because part of this site is a fill area, the characteristics of this soil series for bedrock depth and groundwater depth for this soil unit may not be typical.

Soils at this site fall into the Atkins silt loam, 0 to 2 percent slopes (AkA) This mapping unit is poorly drained, friable soil that is developing on first bottoms. Surface soils are dark grayish-brown silt loam; strongly acid and friable. Subsoils are light grayish-brown to light brownish gray; strongly acid and friable. The thickness of the alluvium ranges from 2 to 6 feet or more. Small areas having better drainage and some areas having a sandy loam to loam surface soil are also included in this unit. These areas will have a fine sandy loam to clay loam subsoil (USDA, 1961).

### ***1.3 Scope of Work***

The scope of work for activities associated with the site investigation at the Fill Area North of Landfill No. 2, Parcel 230(7), specified by the statement of work (USACE, 1998), includes the following tasks:

- Develop the SFSP attachment.
- Develop the SSHP attachment.
- Perform a geophysical survey to determine the location and extent of the fill area.

- Collect seven surface soil samples, seven subsurface soil samples, three groundwater samples, three seep water samples, three surface water samples, three sediment samples, and three depositional soil samples to determine whether potential site-specific chemicals (PSSC) are present at the Fill Area North of Landfill No. 2, Parcel 230(7), and to provide data to determine any future planned corrective measures and closure activities.

At completion of the field activities and sample analyses, draft and final SI summary reports will be prepared to evaluate the absence or presence of PSSC at this site, and to recommend further actions, if appropriate.

## ***2.0 Summary of Existing Environmental Studies***

---

An environmental baseline study (EBS) survey was conducted by ESE to document current environmental conditions of all FTMC property (ESE, 1998). The study was to identify sites that, based on available information, have no history of contamination and comply with U.S. Department of Defense (DOD) guidance for fast track cleanup at closing installations. The EBS also provides a baseline picture of FTMC properties by identifying and categorizing the properties by seven criteria.

1. Areas where no storage, release, or disposal (including migration) has occurred.
2. Areas where only storage has occurred.
3. Areas of contamination below action levels.
4. Areas where all necessary remedial actions have been taken.
5. Areas of known contamination with removal and/or remedial action underway.
6. Areas of known contamination where required response actions have not been taken.
7. Areas that are not evaluated or require further evaluation.

The EBS was conducted in accordance with the Community Environmental Response Facilitation Act (CERFA) (CERFA-Public Law 102-426) protocols and DOD policy regarding contamination assessment. Record searches and reviews were performed on all reasonably available documents from FTMC, Alabama Department of Environmental Management (ADEM), U.S. Environmental Protection Agency (EPA) Region IV, and Calhoun County, as well as a database search of Comprehensive Environmental Response, Compensation, and Liability Act-regulated substances, petroleum products, and Resource Conservation and Recovery Act-regulated facilities. Available historic maps and aerial photographs were reviewed to document historic land uses. Personal and telephone interviews of past and present FTMC employees and military personnel were conducted. In addition, visual site inspections were conducted to verify conditions of specific property parcels.

The Fill Area North of Landfill No. 2, Parcel 230(7) is identified as a CERFA site. This CERFA parcel is a Category 7 area. The site is a dump site where rusted drum parts, other metal, and construction and demolition debris have been observed. PSSCs may have been released onto the

site or to the environment, as materials were disposed of on site property. The Fill Area North of Landfill No. 2, Parcel 230(7) lacks adequate documentation and, therefore, requires additional evaluation to determine the environmental condition of the parcel.

## **3.0 Site-Specific Data Quality Objectives**

---

### **3.1 Overview**

The data quality objectives (DQO) process is followed to establish data requirements. This process ensures that the proper quantity and quality of data are generated to support the decision-making process associated with the action selection for the Fill Area North of Landfill No. 2, Parcel 230(7). This section incorporates the components of the DQO process described in the EPA publication EPA 540-R-93-071 *Data Quality Objectives Process for Superfund* (EPA, 1993). The DQO process as applied to the Fill Area North of Landfill No. 2, Parcel 230(7) is described in more detail in Section 4.3 of the WP (IT, 1998b). Table 3-1 provides a summary of the factors used to determine the appropriate quantity of samples, and the procedures necessary to meet the objectives of the site investigation and establish a basis for future action at this site.

The samples will be analyzed using EPA SW-846 methods, including Update III Methods where applicable, as presented in Chapter 4.0 in this SFSP and Table 6-1 in the QAP. Data will be reported and evaluated in accordance with Corps of Engineers South Atlantic Savannah (CESAS) Level B criteria (USACE, 1994) and the stipulated requirements for the generation of definitive data (Section 3.1.2 of the QAP). Chemical data will be reported by the laboratory in Contract Laboratory Program (CLP)-like forms. These packages will be validated in accordance with EPA National Functional Guidelines by Level III criteria.

### **3.2 Data Users and Available Data**

The intended data users and available data related to the site investigation at the Fill Area North of Landfill No. 2, Parcel 230(7), presented in Table 3-1, have been used to formulate a site-specific conceptual model presented in Section 3.3. This conceptual model was developed to support the preparation of this SFSP, which is necessary to meet the objectives of these activities and to establish a basis for future action at the site. The data users for the data and information generated during field activities are primarily EPA, USACE, ADEM, FTMC, and the USACE supporting contractors. This SFSP, along with the necessary companion documents, has been designed to provide the regulatory agencies with sufficient detail to reach a determination as to the adequacy of the scope of work. The program has also been designed to provide the level of defensible data and information required to confirm or rule out the existence of residual PSSCs in the site media.

Table 3-1

**Summary of Data Quality Objectives  
Site Investigation  
Fill Area North of Landfill No. 2, Parcel 230(7)  
Fort McClellan, Calhoun County, Alabama**

Potential Data Users	Available Data	Conceptual Site Model	Media of Concern	Data Uses and Objectives	Data Types	Analytical Level	Data Quantity
EPA, ADEM USACE, DOD FTMC, IT Corporation Other contractors, and possible future land users	None	<u>Contaminant Source</u> Fill Area (unknown materials in a dump site).	<u>Surface soil</u>	SI to determine the presence or absence of PSSCs in the site media	<u>Surface soil</u> TCL VOCs, TCL SVOCs, TAL Metals, Chlorinated Pesticides, PCBs, Chlorinated Herbicides, Organophosphorus Pesticides, Nitro Explosives	Definitive data in CESAS Level B data packages	7 direct-push soil samples + QC
			<u>Subsurface Soil</u>				
		<u>Migration Pathways</u> Biotransfer, infiltration to sub-surface soil, infiltration and leaching to groundwater, dust emissions and volatilization to air, and surface runoff and erosion to surface water and sediment.	<u>Groundwater</u>	Definitive quality data for future decision-making			
			<u>Surface Water</u>		<u>Subsurface Soil</u> TCL VOCs, TCL SVOCs, TAL Metals, Chlorinated Pesticides, PCBs, Chlorinated Herbicides, Organophosphorus Pesticides, Nitroexplosives	Definitive data in CESAS Level B data packages	7 direct-push soil samples + QC
			<u>Sediment</u>				
			<u>Seep Water</u>				
			<u>Depositional Soil</u>				
		<u>Potential Receptors</u> Groundskeeper (future) Construction worker (future) Resident (future) Recreational site user (current and future).			<u>Direct-Push Groundwater</u> TCL VOCs, TCL SVOCs, TAL Metals, Chlorinated Pesticides, PCBs, Chlorinated Herbicides, Organophosphorus Pesticides, Nitroexplosives	Definitive data in CESAS Level B data packages	3 direct-push groundwater samples + QC
		<u>PSSC</u> Unknown dump site materials.			<u>Surface Water</u> TCL VOCs, TCL SVOCs, TAL Metals, Chlorinated Pesticides, PCBs, Chlorinated Herbicides, Organophosphorus Pesticides, Nitroexplosives	Definitive data in CESAS Level B data packages	3 surface water samples + QC
					<u>Sediment</u> TCL VOCs, TCL SVOCs, TAL Metals, Chlorinated Pesticides, PCBs, Chlorinated Herbicides, Organophosphorus Pesticides, Nitroexplosives, TOC, and Grain Size	Definitive data in CESAS Level B data packages	3 sediment samples + QC
					<u>Seep Water</u> TCL VOCs, TCL SVOCs, TAL Metals, Chlorinated Pesticides, PCBs, Chlorinated Herbicides, Organophosphorus Pesticides, Nitroexplosives	Definitive data in CESAS Level B data packages	3 seep water samples + QC
					<u>Depositional Soil</u> TCL VOCs, TCL SVOCs, TAL Metals, Chlorinated Pesticides, PCBs, Chlorinated Herbicides, Organophosphorus Pesticides, Nitroexplosives	Definitive data in CESAS Level B data packages	3 depositional soil samples + QC

ADEM - Alabama Department of Environmental Management.  
CESAS - Corps of Engineers South Atlantic Savannah.  
DOD - U.S. Department of Defense.  
EPA - U.S. Environmental Protection Agency.  
FTMC - Fort McClellan.  
PCB - Polychlorinated biphenyl.  
PSSC - Potential site-specific chemicals.

QC - Quality control.  
VOC - Volatile organic compound.  
SVOC - Semivolatile organic compound.  
TAL - Target analyte list.  
TCL - Target Compound list.  
TOC - Total organic carbon.  
USACE - U.S. Army Corps of Engineers.

### **3.3 Conceptual Site Exposure Model**

The conceptual site exposure model (CSEM) provides the basis for identifying and evaluating the potential risks to human health to support the risk assessment. The CSEM includes all plausible receptor scenarios and potential exposure pathways. The CSEM graphically presents possible pathways by which a potential receptor may be exposed, including sources, release and transport pathway, and exposure routes. In addition, it facilitates consistent and comprehensive evaluation of human health risks, and helps ensure that potential pathways are not overlooked. The elements necessary to construct a complete exposure pathway and develop the CSEM include:

- Source (i.e., contaminated environmental) media
- Contaminant release mechanisms
- Contaminant transport pathways
- Receptor scenarios
- Exposure pathways.

Contaminant release mechanisms and transport pathways are not required to identify receptor contact scenarios with contaminated source media.

Parcel 230(7) is an abandoned fill area that includes soil intermingled with rusted metal demolition and construction debris in varying states of decay. The precise contents of the fill area is unknown. Possible pathways are considered on the basis of site history and investigation data are not available to narrow the wide array of potential contaminants that may be present at the site. Future site use is uncertain. It is likely that the area will remain unused and overgrown with vegetation, and not become an industrial site or a residential neighborhood (FTMC, 1997). Surface and groundwater runoff from the fill site drain into surrounding soil and Cave Creek to the east. Cave Creek is a very small intermittent stream that is unsuitable for recreational activities such as fishing or swimming. Primary contaminant release was probably to surface and subsurface soil. Potential contaminant transport pathways include infiltration to subsurface soil; infiltration and leaching to shallow groundwater; dust emissions and volatilization to ambient air; biotransfer; and runoff and erosion via the east slope of the site to Cave Creek. Media of concern include surface and subsurface soil, groundwater, surface water, sediment, seep water, and depositional soil.

Plausible receptors identified in the CSEM include:

- The resident scenario, although highly unlikely, is considered for future purposes only. Currently, residents are not present at the site.



- The groundskeeper scenario, although highly unlikely, is considered for future purposes only. The site is currently not maintained by a groundskeeper.
- The construction worker scenario is considered for future purposes only. The site is currently not under construction.
- The recreational site user scenario, which includes hunters, youthful and other intruders, hikers, campers, and other recreational users, is considered for both current and future purposes, although current site usage is not known with certainty.
- The venison consumption scenario is considered for both current and future purposes, as associated hunting activities may currently take place at the site and probably will take place in the future.
- The fish consumption scenario is excluded, because the only relevant body of water, Cave Creek, is unsuitable for fishing.

A summary of relevant contaminant release and transport mechanisms, source and exposure media, receptors, and exposure pathways is provided by Figure 3-1 and Table 3-1.

### ***3.4 Decision-Making Process, Data Uses, and Needs***

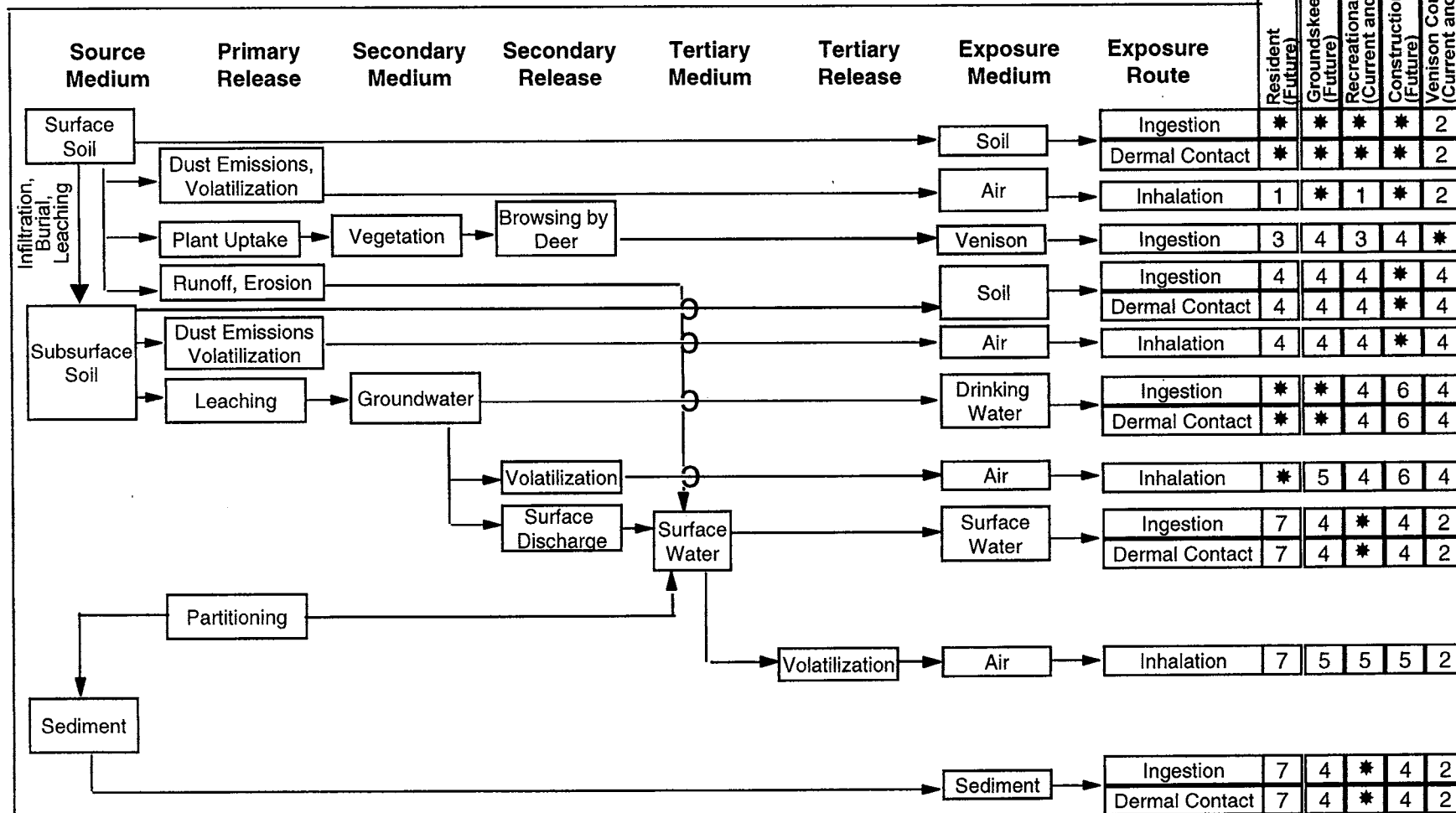
The decision-making process consists of a seven-step process that is presented in detail in Section 4.3 of the WP and will be followed during the SI at the Fill Area North of Landfill No. 2, Parcel 230(7). Data uses and needs are summarized in Table 3-1.

#### ***3.4.1 Risk Evaluation***

Confirmation of contamination at the Fill Area North of Landfill No. 2, Parcel 230(7) will be based on comparing detected site chemical concentrations with site-specific screening levels and background concentrations developed in the WP. EPA definitive data with CESAS Level B data packages will be used to achieve detection limits sufficient to determine whether or not the established guidance criteria are exceeded in site media. Definitive data will be adequate for confirming the presence of site contamination and for supporting a feasibility study and risk assessment.

Assessment of potential ecological risk associated with sites or parcels (e.g., surface water and sediment sampling, specific ecological assessment methods, etc.) will be addressed in the WP (IT, 1998b).

**Figure 3-1**  
**Human Health Conceptual Site Exposure Model**  
**Fill Area North of Landfill No. 2, Parcel 230(7)**  
**Fort McClellan, Alabama**



\* = Complete exposure pathway quantified in site-specific screening level (SSSL) development.

1 = Volatilization from undisturbed surface soil deemed insignificant; soil is likely to be paved or vegetated, reducing dust emissions to insignificant levels; inhalation pathway not quantified.

2 = This scenario is created to assess indirect (food chain) exposure to surface soil, surface water and sediment.

3 = Evaluated under venison and fish consumption scenario.

4 = Incomplete exposure pathway.

5 = Although theoretically complete, this pathway is judged to be insignificant.

6 = Although theoretically complete, these pathways are not quantified for the construction worker because SSSLs developed for the groundskeeper would be at least as restrictive.

7 = Although theoretically complete, SSSLs for these pathways are developed only for the recreational site user. SSSLs developed for the recreational site user may be used to estimate risk for this receptor.

### ***3.4.2 Data Types and Quality***

Surface and subsurface soil, groundwater, surface water, sediment, and seep water will be sampled and analyzed to meet the objectives of the SI at the Fill Area North of Landfill No. 2, Parcel 230(7). Quality assurance/quality control (QA/QC) samples will be collected for all sample types as described in Chapter 4.0 of this SFSP. Samples will be analyzed by EPA-approved SW-846 methods, including Update III methods where applicable. Samples will be analyzed by EPA-approved SW-846 methods, where available; comply with EPA definitive data requirements; and be reported using hard copy data packages. In addition to meeting the quality needs of this SI, data analyzed at this level of quality are appropriate for all phases of site characterization, remedial investigation, and risk assessment.

### ***3.4.3 Precision, Accuracy, and Completeness***

Laboratory requirements of precision, accuracy, and completeness for this SI are provided in Chapter 9.0 of the QAP.

## **4.0 Field Activities**

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### **4.1 Utility Clearances**

Prior to performing any intrusive sampling, a utility clearance will be performed at all locations where soil and groundwater samples will be collected, using the procedure outlined in Section 4.2.6 of the SAP (IT, 1998a). The site manager will mark the proposed locations with stakes, coordinate with the installation to clear the proposed locations for utilities, and obtain digging permits. Once the locations are cleared, the stakes will be labeled as cleared.

### **4.2 Surface Geophysical Survey**

Geophysical survey techniques offer the best approach to locating and mapping potential landfill areas and any subsurface anomalies. A surface geophysical survey using magnetics, time- and frequency-domain electromagnetic (EM) induction, and ground-penetrating radar (GPR) techniques will be conducted over the Fill Area North of Landfill No. 2 to locate and delineate the horizontal extent of the fill area at the site. Due to thick vegetation present at this site, a global positioning system (GPS) will be used to provide geophysical survey control.

#### **4.2.1 Methodology and Instrumentation**

The magnetic surveys will be conducted using a Geometrics G-858G magnetic gradiometer (for collecting survey data) and a Geometrics G-856AX magnetometer or equivalent (for collecting base station data). The time-domain EM surveys will be conducted using a Geonics EM61 high-resolution metal detector coupled to an Omnidata DL720 digital data logger. Frequency-domain EM surveys will be conducted using a Geonics EM31 and EM34-3XL terrain conductivity meter, each coupled to an Omnidata DL720 digital data logger. Use of the G-858G and the EM31 is the preferred method of detecting tanks; however, in areas of significant cultural interference (e.g., structures, fences, reinforced concrete), the EM61 will be employed, since this system is less affected by surface culture. The EM34-3XL surveys will be conducted based on site-specific conditions in which deep burial of target materials is suspected. The GPR survey will be conducted using a Geophysical Survey Systems Inc. (GSSI) System-2P or equivalent, coupled to either 200- or 400-megahertz antennas, depending on site conditions and signal attenuation. If required, a Metrotech 9860-NRL EM utility locator or equivalent will be used to confirm the presence or absence of metallic subsurface utilities, which may be evident as linear anomalies in the EM31 or EM61 contour maps.

Geophysical survey procedures to be used to conduct the investigation, including survey control, equipment calibration, field base station and data validation, data processing and interpretation, and file tracking procedures, will be in accordance with the methods and procedures outlined in Chapter 4.0 of the SAP (IT, 1998a) and the following IT standard operating procedures for geophysical investigations:

- ITGP-001: Surface Magnetic Surveys
- ITGP-002: Surface Frequency-Domain Electromagnetic Surveys
- ITGP-003: Ground-Penetrating Radar Surveys
- ITGP-004: Surface Time-Domain Electromagnetic Surveys
- ITGP-005: Global Positioning System Surveys.

The following tasks will be performed prior to conducting the survey:

- Review existing site surface and subsurface information (e.g., aerial photographs, utility maps, boring logs, etc.).
- Evaluate the potential influence of cultural features (e.g., overhead and subsurface utilities, fences, buildings, etc.).
- Conduct a visual inspection of the sites to verify the likely boundaries of the fill area.
- Conduct reconnaissance scans across the general area of the sites with the magnetic and/or EM instruments to determine whether geophysical anomalies exist within the proposed survey areas and/or near the proposed boundaries. The geophysical survey area boundaries for each site will be chosen in the field based on these results.

Following visual inspection of the site and evaluation of reconnaissance scans with the instruments, a base grid will be staked throughout the site such that the resolution objectives of the investigation are achieved (typically 50- to 100-foot centers). The base grid will be established using the GPS surveying technique. The geophysics base grid will be referenced to the Alabama State Plane Coordinate System. Using the base grid as a reference, the vegetation removal crew will clear approximately 3-foot-wide lanes through the brush. Following brush removal, the geophysics crew will use the GPS to establish control points on 20-foot centers throughout the site. The control points will be marked with surveyor's paint and/or plastic pinflags. To the extent possible, the grids will be oriented in the north to south (N-S) direction. If surface metal is present, it shall be removed where possible prior to collecting geophysical data.

After the survey grids are complete and control points are marked, all surface objects that could potentially affect the geophysical data (e.g., surface metal, variations in topography, overhead utilities, etc.) will be mapped using the GPS so that anomalies caused by these objects can be correctly interpreted.

Geophysical data processing will be completed in the field following the survey. The EM and magnetic data will be presented as color-enhanced contour maps to facilitate recognition of subtle anomalies. Geophysical anomalies will be field-checked to verify their source as either surface culture or subsurface objects/debris. Surface source materials responsible for the observed geophysical anomalies will be documented on the contour maps. Anomalies caused by subsurface source materials the size of an underground storage tank (UST) will be marked in the field for further characterization with GPR. GPR will be used to discriminate between anomalies caused by USTs and those potentially caused by pits containing significant metal debris.

The conclusions from the geophysical survey at this site will be incorporated into the SI report and a geophysics report will be provided as an appendix to the SI report.

#### **4.2.2 Areal Coverage**

The Fill Area North of Landfill No. 2 site geophysical surveys will encompass the area shown in Figure 1-2. The following is a list of steps that will be performed at the site:

- G-858G magnetic gradiometer data will be collected at 0.5-second intervals (approximate 2.0- to 2.5-foot intervals) along N-S oriented survey lines spaced 5 feet apart.
- EM31 survey data will be collected at 5-foot intervals along N-S and east to west (E-W) oriented survey lines spaced 10 feet apart.
- EM34-3XL survey data will be collected, if necessary, using the 10- and 20-meter intercoil spacing configuration. Data will be collected in the vertical and horizontal dipole orientations at 2.5-meter intervals along N-S oriented survey lines spaced 2.5 meters apart.
- EM61 survey data will be collected at approximate 2-foot intervals along N-S and E-W oriented survey lines spaced 5 feet apart.
- GPR profile data will be collected to further characterize anomalies potentially representing the USTs seen in the magnetic and/or EM data. The orientation and length of the GPR lines will be chosen in the field to yield the most usable results.

- In areas of the site where linear EM31 or EM61 anomalies potentially representing pipelines/utilities are observed in the contoured data, the lines will be verified with the Metrotech 9860-NRL EM utility locator. Verification is necessary since the anomalous response caused by subsurface utilities may sometimes be mistaken for large buried metal objects. The locations of interpreted pipelines will be marked in the field with surveyor's paint and placed on the site map.

It is anticipated that three of the geophysical surveys described will be conducted: G-858G magnetic gradiometer, EM31, and EM61. However, as field conditions dictate, some or all of the survey techniques will be utilized. Due to the limited information about the fill area, the most efficient reconnaissance process will be to address the complete site with the geophysical surveys instead of targeting any specific part of the site.

### ***4.3 Environmental Sampling***

The environmental sampling program during the SI at the Fill Area North of Landfill No. 2, Parcel 230(7) includes the collection of seven surface soil samples, seven subsurface soil samples, three groundwater samples, three seep water samples, three surface water samples, and three sediment samples for chemical analyses. These samples will be collected and analyzed to provide data for characterizing the site to determine the environmental condition of the site and any further action to be conducted at the site.

#### ***4.3.1 Surface Soil Sampling***

Surface soil samples will be collected from seven soil borings installed at the Fill Area North of Landfill No. 2, Parcel 230(7).

##### ***4.3.1.1 Sampling Locations and Rationale***

The surface soil sampling rationale is provided in Table 4-1. Proposed sampling locations are shown on Figure 4-1. Surface soil sample designations, depths, and required QA/QC sample quantities are listed in Table 4-2. The exact surface soil sampling locations will be determined in the field by the on-site geologist based on actual field conditions and the results of the geophysical survey.

##### ***4.3.1.2 Sample Collection***

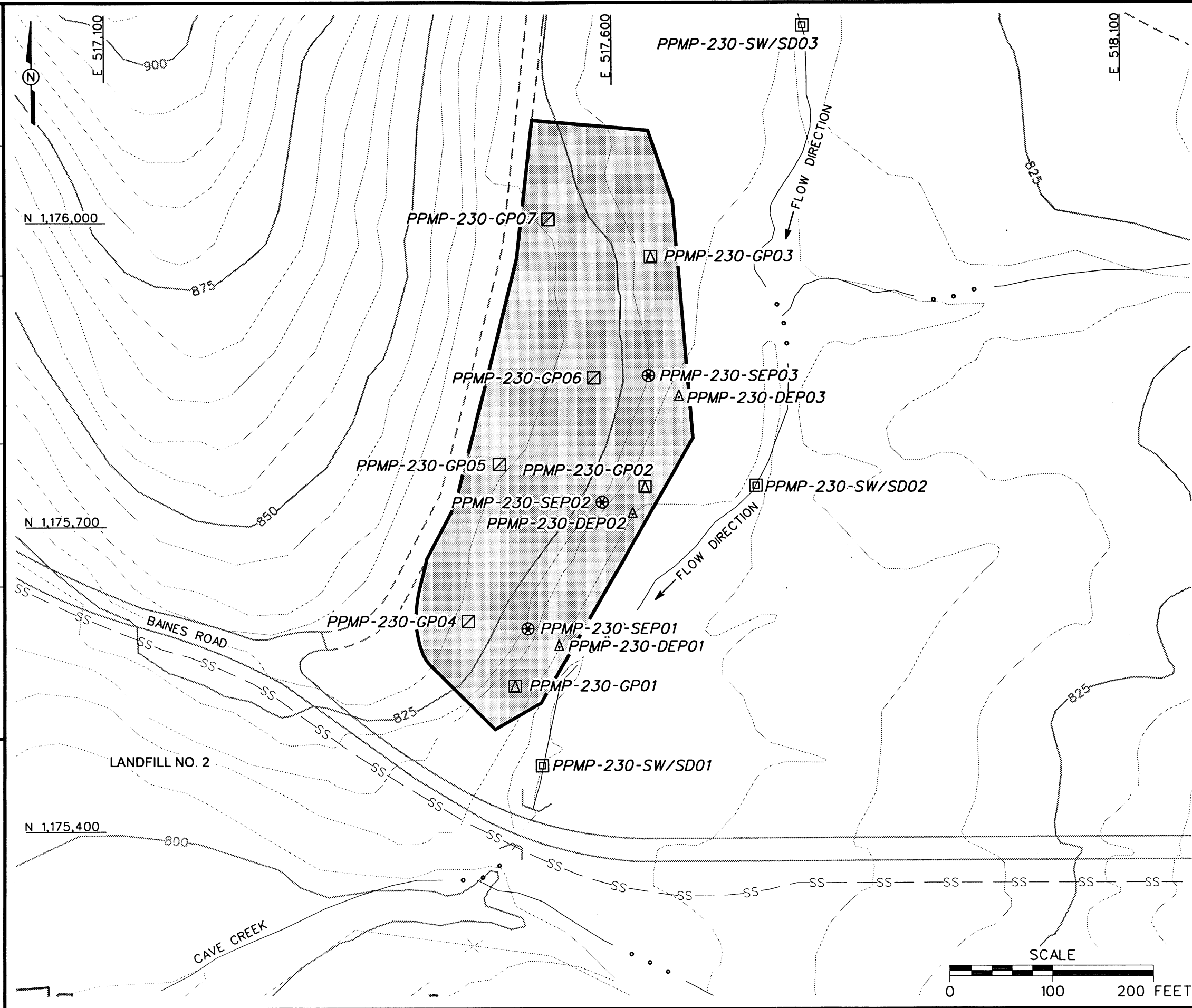
Surface soil samples will be collected from the upper 1 foot of soil by direct-push technology in accordance with the procedures specified in Section 4.7.1.1 of the SAP (IT, 1998a). Collected soil samples will be screened using a photoionization detector (PID) in accordance with Section

Table 4-1

**Sample Locations And Rationale**  
**Fill Area North of Landfill No. 2, Parcel 230(7)**  
**Fort McClellan, Calhoun County, Alabama**

Sample Location	Sample Media	Sample Location Rationale
PPMP-230-GP01	Surface soil, subsurface soil, and groundwater	Soil boring for surface and subsurface soil and one temporary well to be placed downgradient in the southern end of the Fill Area near Cave Creek. Sample data will indicate if potential site-specific chemical (PSSC) releases have occurred from historical use of the Fill Area and if contaminated materials and soil exist in this site.
PPMP-230-GP02	Surface soil, subsurface soil, and groundwater	Soil boring for surface and subsurface soil and one temporary well to be placed downgradient of the slope in the center of the eastern side of the Fill Area site. Sample data will indicate if PSSC releases have occurred from historical use of the Fill Area and if contaminated materials and soil exist in this site.
PPMP-230-GP03	Surface soil, subsurface soil, and groundwater	Soil boring for surface and subsurface soil and one temporary well to be placed downgradient of the slope in the northern end of the Fill Area site. Sample data will indicate if PSSC releases have occurred from historical use of the Fill Area and if contaminated materials and soil exist in this site.
PPMP-230-GP04	Surface soil and subsurface soil	Soil boring for surface and subsurface soil samples to be placed in upper elevation of the southwestern end of the Fill Area. Sample data will indicate if PSSC releases have occurred from historical use of the Fill Area and if contaminated materials and soil exist in this site.
PPMP-230-GP05	Surface soil and subsurface soil	Soil boring for surface and subsurface soil samples to be placed in the upper elevation near the western edge of the Fill Area site. Sample data will indicate if PSSC releases have occurred from historical use of the Fill Area and if contaminated materials and soil exist in this site.
PPMP-230-GP06	Surface soil and subsurface soil	Soil boring for surface and subsurface soil samples to be placed in the upper elevation near the center of the Fill Area site. Sample data will indicate if PSSC releases have occurred from historical use of the Fill Area and if contaminated materials and soil exist in this site.
PPMP-230-GP07	Surface soil and subsurface soil	Soil boring for surface and subsurface soil samples to be placed in upper elevation near the northwestern end of the Fill Area site. Sample data will indicate if PSSC releases have occurred from historical use of the Fill Area and if contaminated materials and soil exist in this site.
PPMP-230-SW/SD01	Surface water and sediment	Sample location is in Cave Creek downstream of the south end of the Fill Area. Evidence of PSSC mobility from within the site would likely be reflected at this location in Cave Creek west of the Fill Area site.
PPMP-230-SW/SD02	Surface water and sediment	Sample location is in Cave Creek downgradient of the center area of the Fill Area site. Evidence of PSSC mobility from within the site would likely be reflected at this location in Cave Creek west of the Fill Area site.
PPMP-230-SW/SD03	Surface water and sediment	Sample location is in Cave Creek upstream of the Fill Area. Evidence of PSSC mobility from within the site would not likely be reflected at this location in Cave Creek west of the Fill Area site.
PPMP-230-SEP01	Seep water	Sample location is a surface discharge of groundwater (seep) at the southern end of the Fill Area site at eastern base of the slope. Evidence of PSSC mobility in shallow groundwater from within the site may likely be reflected at this location. Final location of the seep will depend on field geologist's observations and weather conditions.
PPMP-230-SEP02	Seep water	Sample location is a surface discharge of groundwater (seep) in the center of the Fill Area site at eastern base of the slope. Evidence of PSSC mobility in shallow groundwater from within the site may likely be reflected at this location. Final location of the seep will depend on field geologist's observations and weather conditions.
PPMP-230-SEP03	Seep water	Sample location is a surface discharge of groundwater (seep) in the upper end of the Fill Area site at eastern base of the slope. Evidence of PSSC mobility in shallow groundwater from within the site may likely be reflected at this location. Final location of the seep will depend on field geologist's observations and weather conditions.
PPMP-230-DEP01	Depositional soil	Sample location downgradient of seep at the southern end of the Fill Area site at eastern base of the slope. Sampling location represents a low elevation area where surface water runoff could collect, and potentially percolate into the substratum or deposit suspended or dissolved materials after evaporation. Final location of the seep will depend on field geologist's observations and weather conditions.
PPMP-230-DEP02	Depositional soil	Sample location is downgradient of seep in the center of the Fill Area site at eastern base of the slope. Sampling location represents a low elevation area where surface water runoff could collect, and potentially percolate into the substratum or deposit suspended or dissolved materials after evaporation. Final location of the seep will depend on field geologist's observations and weather conditions.
PPMP-230-DEP03	Depositional soil	Sample location is downgradient of seep in the upper end of the Fill Area site at eastern base of the slope. Sampling location represents a low elevation area where surface water runoff could collect, and potentially percolate into the substratum or deposit suspended or dissolved materials after evaporation. Final location of the seep will depend on field geologist's observations and weather conditions.





- LEGEND**
- UNIMPROVED ROADS AND PARKING
  - PAVED ROADS AND PARKING
  - BUILDING
  - TOPOGRAPHIC CONTOURS
  - PARCEL BOUNDARY
  - BRIDGE
  - CULVERT WITH HEADWALL
  - SURFACE DRAINAGE
  - FENCE
  - PROPOSED SURFACE WATER/SEDIMENT SAMPLE
  - PROPOSED SEEP WATER SAMPLE
  - PROPOSED SURFACE AND SUBSURFACE SOIL SAMPLE
  - PROPOSED GROUNDWATER, SURFACE AND SUBSURFACE SOIL SAMPLE
  - PROPOSED DEPOSITIONAL SOIL SAMPLE

**FIGURE 4-1**  
**PROPOSED SAMPLE LOCATIONS**  
**FILL AREA, NORTH OF LANDFILL NO. 2**  
**PARCEL 230(7)**

U. S. ARMY CORPS OF ENGINEERS  
MOBILE DISTRICT  
FORT McCLELLAN  
CALHOUN COUNTY, ALABAMA  
Contract No. DACA21-96-D-0018

**IT** INTERNATIONAL  
TECHNOLOGY  
CORPORATION

Table 4-2

**Soil and Sediment Sample Designations and QA/QC Sample Quantities**  
**Fill Area North of Landfill No. 2, Parcel 230(7)**  
**Fort McClellan, Calhoun County, Alabama**

(Page 1 of 2)

Sample Location	Sample Designation	Sample Matrix	Sample Depth (ft)	QA/QC Samples			Analytical Suite
				Field Duplicates	Field Splits	MS/MSD	
PPMP-230-GP01	PPMP-230-GP01-SS-KCC0001-REG	soil	0-1	PPMP-230-GP01-SS-KCC0002-FD	PPMP-230-GP01-SS-KCC0003-FS		TCL VOCs, TCL SVOCs, TAL Metals, Chlorinated Pesticides, PCBs, Chlorinated Herbicides, Organophosphorus Pesticides, Nitroexplosives
	PPMP-230-GP01-DS-KCC0004-REG	soil	a				
PPMP-230-GP02	PPMP-230-GP02-SS-KCC0005-REG	soil	0-1			PPMP-230-GP02-SS-KCC0005-MS PPMP-230-GP02-SS-KCC0005-MSD	TCL VOCs, TCL SVOCs, TAL Metals, Chlorinated Pesticides, PCBs, Chlorinated Herbicides, Organophosphorus Pesticides, Nitroexplosives
	PPMP-230-GP02-DS-KCC0006-REG	soil	a				
PPMP-230-GP03	PPMP-230-GP03-SS-KCC0007-REG	soil	0-1				TCL VOCs, TCL SVOCs, TAL Metals, Chlorinated Pesticides, PCBs, Chlorinated Herbicides, Organophosphorus Pesticides, Nitroexplosives
	PPMP-230-GP03-DS-KCC0008-REG	soil	a				
PPMP-230-GP04	PPMP-230-GP04-SS-KCC0009-REG	soil	0-1				TCL VOCs, TCL SVOCs, TAL Metals, Chlorinated Pesticides, PCBs, Chlorinated Herbicides, Organophosphorus Pesticides, Nitroexplosives
	PPMP-230-GP04-DS-KCC0010-REG	soil	a				
PPMP-230-GP05	PPMP-230-GP05-SS-KCC0011-REG	soil	0-1				TCL VOCs, TCL SVOCs, TAL Metals, Chlorinated Pesticides, PCBs, Chlorinated Herbicides, Organophosphorus Pesticides, Nitroexplosives
	PPMP-230-GP05-DS-KCC0012-REG	soil	a				
PPMP-230-GP06	PPMP-230-GP06-SS-KCC0013-REG	soil	0-1				TCL VOCs, TCL SVOCs, TAL Metals, Chlorinated Pesticides, PCBs, Chlorinated Herbicides, Organophosphorus Pesticides, Nitroexplosives
	PPMP-230-GP06-DS-KCC0014-REG	soil	a				
PPMP-230-GP07	PPMP-230-GP07-SS-KCC0015-REG	soil	0-1				TCL VOCs, TCL SVOCs, TAL Metals, Chlorinated Pesticides, PCBs, Chlorinated Herbicides, Organophosphorus Pesticides, Nitroexplosives
	PPMP-230-GP07-DS-KCC0016-REG	soil	a				
PPMP-230-SW/SDO1	PPMP-230-SW/SDO1-SD-KCC1001-REG	sediment	N/A				TCL VOCs, TCL SVOCs, TAL Metals, Chlorinated Pesticides, PCBs, Chlorinated Herbicides, Organophosphorus Pesticides, Nitroexplosives <i>For sediment samples, only, add TOC and Grain Size</i>
PPMP-230-SW/SDO2	PPMP-230-SW/SDO2-SD-KCC1003-REG	sediment	N/A				TCL VOCs, TCL SVOCs, TAL Metals, Chlorinated Pesticides, PCBs, Chlorinated Herbicides, Organophosphorus Pesticides, Nitroexplosives <i>For sediment samples, only, add TOC and Grain Size</i>
PPMP-230-SW/SDO3	PPMP-230-SW/SDO3-SD-KCC1004-REG	sediment	N/A				TCL VOCs, TCL SVOCs, TAL Metals, Chlorinated Pesticides, PCBs, Chlorinated Herbicides, Organophosphorus Pesticides, Nitroexplosives <i>For sediment samples, only, add TOC and Grain Size</i>
PPMP-230-DEPO1	PPMP-230-DEPO1-DEP-KCC0017-REG	depositional soil	0-1				TCL VOCs, TCL SVOCs, TAL Metals, Chlorinated Pesticides, PCBs, Chlorinated Herbicides, Organophosphorus Pesticides, Nitroexplosives
PPMP-230-DEPO2	PPMP-230-DEPO2-DEP-KCC0018-REG	depositional soil	0-1				TCL VOCs, TCL SVOCs, TAL Metals, Chlorinated Pesticides, PCBs, Chlorinated Herbicides, Organophosphorus Pesticides, Nitroexplosives
PPMP-230-DEPO3	PPMP-230-DEPO3-DEP-KCC0019-REG	depositional soil	0-1	PPMP-230-DEPO3-DEP-KCC0020-FS			TCL VOCs, TCL SVOCs, TAL Metals, Chlorinated Pesticides, PCBs, Chlorinated Herbicides, Organophosphorus Pesticides, Nitroexplosives

**Table 4-2**

**Soil and Sediment Sample Designations and QA/QC Sample Quantities  
Fill Area North of Landfill No. 2, Parcel 230(7)  
Fort McClellan, Calhoun County, Alabama**

(Page 2 of 2)

\*Actual sample depth selected for analysis will be at the discretion of the site geologist and will be based on field observation.

FD - Field duplicate.  
FS - Field split.  
MS/MSD - Matrix spike/matrix spike duplicate.  
N/A - Not applicable.  
PCB - Polychlorinated biphenyl.

QA/QC - Quality assurance/quality control.  
REG - Field sample.  
SVOC - Semivolatile organic compound.  
TAL - Target analyte list.

TCL - Target compound list.  
TOC - Total organic carbon.  
VOC - Volatile organic compound.

4.15 of the SAP. Sample containers, sample volumes, preservatives, and holding times for the analyses required in this SFSP are listed in Section 5.0, Table 5-1 of the QAP. Sample documentation and chain-of-custody will be recorded as specified in Section 4.13 of the SAP. The samples will be analyzed for the parameters listed in Section 4.6 of this SFSP.

### **4.3.2 Subsurface Soil Sampling**

Subsurface soil samples will be collected from seven soil borings installed at the Fill Area North of Landfill No. 2, Parcel 230(7).

#### **4.3.2.1 Sample Locations and Rationale**

Subsurface soil samples will be collected from the seven soil borings proposed on Figure 4-1. The subsurface soil sampling rationale is presented in Table 4-1. Subsurface soil sample designations, depths, and required QA/QC sample quantities are listed in Table 4-2. The exact soil boring sampling locations will be determined in the field by the on-site geologist based on actual field observations and the results of the geophysical survey.

#### **4.3.2.2 Sample Collection**

Subsurface soil samples will be collected from soil borings at a depth greater than 1 foot bgs in the unsaturated zone. The soil borings will be advanced and soil samples collected using the direct-push sampling procedures specified in Sections 4.7.1.1 of the SAP (IT, 1998a).

Sample documentation and chain of custody (COC) will be recorded as specified in Section 4.13 of the SAP. Sample containers, sample volumes, preservatives, and holding times for the analyses required in this SFSP are listed in Section 5.0, Table 5-1 of the QAP. The samples will be analyzed for the parameters listed in Section 4.6 of this SFSP.

Soil samples will be collected continuously for the first 12 feet or until groundwater or refusal is reached. A detailed lithological log will be recorded by the on-site geologist for each borehole. At least one subsurface sample from each borehole will be selected for analyses. The collected subsurface soil samples will be field-screened using a PID in accordance with Section 4.15 of the SAP to measure samples exhibiting elevated readings above background. Typically, the sample showing the highest reading will be selected and sent to the laboratory for analysis. If none of the samples indicate readings above background using the PID, then the deepest interval from the soil boring will be sampled and submitted to the laboratory for analyses. Subsurface soil samples will be selected for analyses from any depth interval if the on-site geologist suspects PSSCs at

the interval. Site conditions such as lithology may also determine the actual sample depth interval submitted for analyses. More than one subsurface soil sample will be collected if field measurements and observations indicate a possible layer of PSSCs and/or additional sample data would provide insight to the existence of any PSSCs.

#### **4.3.3 Groundwater Sampling**

Groundwater samples will be collected from three soil borings installed at the Fill Area North of Landfill No. 2, Parcel 230(7).

##### **4.3.3.1 Sampling Locations and Rationale**

Groundwater samples will be collected from direct-push temporary wells installed at the site. Groundwater samples will be collected from the locations shown on Figure 4-1. The groundwater sampling rationale is listed in Table 4-1. The groundwater sample designations, depths, and required QA/QC sample quantities are listed in Table 4-3. The exact sampling locations will be determined in the field by the on-site geologist based on actual field conditions and the results of the geophysical survey.

##### **4.3.3.2 Sample Collection**

Groundwater samples will be collected in accordance with the procedures and methods specified in Sections 4.7.1.1 of the SAP (IT, 1998a). Direct-push temporary wells will be advanced into the water table (to a depth where sufficient water is encountered) to collect a groundwater sample. The temporary well will be installed in the soil boring to collect a water sample from the water table surface.

At direct-push temporary well locations, where either refusal is reached before encountering water or direct-push temporary wells do not yield sufficient groundwater for laboratory analysis, conventional drilling methods will be utilized to install temporary monitoring wells. Temporary monitoring wells will be completed as specified in the addendum to Appendix C of the SAP, Section C.5.7 (IT, 1998c).

Sample documentation and COC will be recorded as specified in Section 4.13 of the SAP. Sample containers, sample volumes, preservatives, and holding times for the analyses required in this SFSP are listed in Section 5.0, Table 5-1 of the QAP. The samples will be analyzed for the parameters listed in Section 4.6 of this SFSP.

Table 4-3

**Groundwater, Surface Water, and Seep Water Sample Designations and QA/QC Sample Quantities**  
**Fill Area North of Landfill No. 2, Parcel 230(7)**  
**Fort McClellan, Calhoun County, Alabama**

Sample Location	Sample Designation	Sample Matrix	Sample Depth (ft)	QA/QC Samples			Analytical Suite
				Field Duplicates	Field Splits	MS/MSD	
PPMP-230-GP01	PPMP-230-GP01-GW-KCC3001-REG	groundwater	a	PPMP-230-GP01-GW-KCC3002-FD	PPMP-230-GP01-GW-KCC3003-FS		TCL VOCs, TCL SVOCs, TAL Metals, Chlorinated Pesticides, PCBs, Chlorinated Herbicides, Organophosphorus Pesticides, Nitroexplosives
PPMP-230-GP02	PPMP-230-GP02-GW-KCC3004-REG	groundwater	a				TCL VOCs, TCL SVOCs, TAL Metals, Chlorinated Pesticides, PCBs, Chlorinated Herbicides, Organophosphorus Pesticides, Nitroexplosives
PPMP-230-GP03	PPMP-230-GP03-GW-KCC3005-REG	groundwater	a				TCL VOCs, TCL SVOCs, TAL Metals, Chlorinated Pesticides, PCBs, Chlorinated Herbicides, Organophosphorus Pesticides, Nitroexplosives
PPMP-230-SW/SDO1	PPMP-230-SW/SDO1-SW-KCC2001-REG	surface water	N/A				TCL VOCs, TCL SVOCs, TAL Metals, Chlorinated Pesticides, PCBs, Chlorinated Herbicides, Organophosphorus Pesticides, Nitroexplosives
PPMP-230-SW/SDO2	PPMP-230-SW/SDO2-SW-KCC2002-REG	surface water	N/A			PPMP-230-SW/SDO2-SW-KCC2002-MS PPMP-230-SW/SDO2-SW-KCC2002-MSD	TCL VOCs, TCL SVOCs, TAL Metals, Chlorinated Pesticides, PCBs, Chlorinated Herbicides, Organophosphorus Pesticides, Nitroexplosives
PPMP-230-SW/SDO3	PPMP-230-SW/SDO3-SW-KCC2003-REG	surface water	N/A				TCL VOCs, TCL SVOCs, TAL Metals, Chlorinated Pesticides, PCBs, Chlorinated Herbicides, Organophosphorus Pesticides, Nitroexplosives
PPMP-230-SEP01	PPMP-230-SEP01-SW-KCC2004-REG	seep water	N/A				TCL VOCs, TCL SVOCs, TAL Metals, Chlorinated Pesticides, PCBs, Chlorinated Herbicides, Organophosphorus Pesticides, Nitroexplosives
PPMP-230-SEP02	PPMP-230-SEP02-SW-KCC2005-REG	seep water	N/A				TCL VOCs, TCL SVOCs, TAL Metals, Chlorinated Pesticides, PCBs, Chlorinated Herbicides, Organophosphorus Pesticides, Nitroexplosives
PPMP-230-SEP03	PPMP-230-SEP03-SW-KCC2006-REG	seep water	N/A				TCL VOCs, TCL SVOCs, TAL Metals, Chlorinated Pesticides, PCBs, Chlorinated Herbicides, Organophosphorus Pesticides, Nitroexplosives

\* Sample depth will depend on where sufficient first water is encountered to collect a water sample.

FD - Field duplicate.  
 FS - Field split.  
 MS/MSD - Matrix spike/matrix spike duplicate.  
 N/A - Not applicable.  
 PCB - Polychlorinated biphenyl.  
 QA/QC - Quality assurance/quality control.

REG - Field sample.  
 SVOC - Semivolatile organic compound.  
 TAL - Target analyte list.  
 TCL - Target compound list.  
 VOC - Volatile organic compound.

#### **4.3.4 Surface Water Sampling**

Three surface water samples will be collected from Cave Creek that flows south along the eastern boundary of the site.

##### **4.3.4.1 Sample Locations and Rationale**

The surface water sampling rationale is listed in Table 4-1. Surface water samples will be collected from the locations proposed on Figure 4-1. The surface water sample designations and required QA/QC sample requirements are listed in Table 4-3. The exact sampling location will be determined in the field by the ecological sampler, based on drainage pathways and actual field observations.

##### **4.3.4.2 Sample Collection**

Surface water samples will be collected in accordance with the procedures specified in Section 4.9.1.3 of the SAP. Sample documentation and COC will be recorded as specified in Section 4.13 of the SAP. Sample containers, sample volumes, preservatives, and holding times for the analyses required in this SFSP are listed in Section 5.0, Table 5-1, of the QAP. The samples will be analyzed for the parameters listed in Section 4.6 of this SFSP.

#### **4.3.5 Sediment Sampling**

Three sediment samples will be collected from Cave Creek that flows south along the eastern boundary of the site. The sediment samples will be collected at the same locations as the surface water samples described in Section 4.3.1.

##### **4.3.5.1 Sample Locations and Rationale**

The proposed locations for the sediment samples are shown in Figure 4-1. Sediment sampling rationale are presented in Table 4-1. Sediment sample designations and required QA/QC sample requirements are listed in Table 4-2. The actual sediment sample points will be at the discretion of the ecological sampler, based on the drainage pathways and actual field observations.

##### **4.3.5.2 Sample Collection**

Sediment samples will be collected in accordance with the procedures specified in Section 4.9.1.2 of the SAP. Sample documentation and COC will be recorded as specified in Section 4.13 of the SAP. Sample containers, sample volumes, preservatives, and holding times for the analyses required in this SFSP are listed in Section 5.0, Table 5-1 of the QAP. The sediment samples will be analyzed for the parameters listed in Section 4.6 of this SFSP.

#### **4.3.6 Seep Water Sampling**

Three seep water samples will be collected from along the base of the eastern slope in the Fill Area North of Landfill No. 2.

##### **4.3.6.1 Sample Locations and Rationale**

The seep water sampling rationale is listed in Table 4-1. Seep water samples will be collected from the locations proposed on Figure 4-1. The seep water sample designations and required QA/QC sample requirements are listed in Table 4-3. The exact sampling location will be determined in the field by the ecological sampler, based on drainage pathways and actual field observations.

##### **4.3.6.2 Sample Collection**

Seep water samples will be collected in accordance with the procedures specified in Section 4.9.1.3 of the SAP. Sample documentation and COC will be recorded as specified in Section 4.13 of the SAP. Sample containers, sample volumes, preservatives, and holding times for the analyses required in this SFSP are listed in Section 5.0, Table 5-1, of the QAP. The samples will be analyzed for the parameters listed in Section 4.6 of this SFSP.

#### **4.3.7 Depositional Soil Sampling**

Three depositional soil samples will be collected at the Fill Area North of Landfill No. 2.

##### **4.3.7.1 Sample Locations and Rationale**

The depositional soil samples will be collected in the surface drainage features that surround the site. The sampling rationale is listed in Table 4-1 and the proposed sampling locations are shown on Figure 4-1. The depositional soil sample designations, depth, and required QA/QC sample quantities are listed in Table 4-2. The actual depositional soil sample points will be at the discretion of the ecological sampler, based on the physical characteristics of the drainage area and actual field observations.

##### **4.3.7.2 Sample Collection**

Depositional soil sample collection will be conducted in accordance with the procedures for surface soil sample collection specified in Section 4.9.1.1 of the SAP. Sample documentation and COC will be recorded as specified in Section 4.13 of the SAP. Sample containers, sample volumes, preservatives, and holding times for the analyses required in this SFSP are listed in



Section 5.0, Table 5-1 of the QAP. The sample will be analyzed for the parameters listed in Section 4.6 of this SFSP.

#### ***4.4 Decontamination Requirements***

Decontamination will be performed on sampling and nonsampling equipment to prevent cross-contamination between sampling locations. Decontamination of sampling equipment will be performed in accordance with the requirements presented in Section 4.10.1.1 of the SAP.

Decontamination of nonsampling equipment will be performed in accordance with the requirements presented in Section 4.10.1.2 of the SAP.

#### ***4.5 Surveying of Sample Locations***

Sampling locations will be marked with pin flags, stakes, and/or flagging and will be surveyed using either GPS or conventional civil survey techniques, as necessary, to obtain the required level of accuracy. Horizontal coordinates will be referenced to the Alabama State Plane Coordinate System, 1983 North American Datum (NAD83). Elevations will be referenced to the National Geodetic Vertical Datum of 1929 or the North American Vertical Datum of 1988 (soon to be established on site).

Horizontal coordinates for all soil, sediment, and surface water locations will be recorded using a GPS to provide accuracy within 1 meter. Because of the need to use temporary wells to determine water levels, a higher level of accuracy is required. Temporary wells will be surveyed to an accuracy of 0.1 foot for both horizontal coordinates and elevations, using survey-grade GPS techniques and/or conventional civil survey techniques, as required. Permanent monitoring well locations will be surveyed by a registered professional land surveyor to provide the required accuracy of 0.1 foot for horizontal coordinates and 0.01 foot for elevations.

Procedures to be used for GPS surveying are described in Section 4.3 of the SAP. Conventional land survey requirements are presented in Section 4.19 of the SAP.

#### ***4.6 Analytical Program***

Samples collected at locations specified in this chapter will be analyzed for the specific suites of chemicals and elements based on the history of site usage, as well as EPA, ADEM, FTMC, and USACE requirements. Target analyses for samples collected from the Fill Area North of Landfill No. 2, Parcel 230(7) consist of the following list of analytical suites:

- Target Compound List Volatile Organic Compounds - Method 5035/8260B
- Target Compound List Semivolatile Organic Compounds - Method 8270C
- Target Analyte List Metals - Method 6010B/7000
- Chlorinated Pesticides - Method 8081A
- Polychlorinated Biphenyls - Method 8082
- Chlorinated Herbicides - Method 8051A
- Organophosphorus Pesticides - Method 8141A
- Nitroexplosives – Method 8330.

The sediment samples will be analyzed for the following list of parameters:

- Total Organic Carbon – Method 9060
- Grain Size – ASTM D-421/D-422.

The samples will be analyzed using EPA SW-846 methods, including Update III Methods where applicable, as presented in Table 4-4 in this SSFP and Table 6-1 in the QAP. Data will be reported and evaluated in accordance with CESAS Level B criteria (USACE, 1994) and the stipulated requirements for the generation of definitive data (Section 3.1.2 of the QAP). Chemical data will be reported via hard copy data packages by the laboratory using CLP-like forms. These packages will be validated in accordance with EPA National Functional Guidelines by Level III criteria.

#### ***4.7 Sample Preservation, Packaging, and Shipping***

Sample preservation, packaging, and shipping will follow the procedures as specified in Section 4.13.2 of the SAP. Completed analysis request/COC records will be secured and included with each shipment of coolers to the following subcontract laboratory:

Sample Receiving  
 Quanterra Environmental Services  
 5815 Middlebrook Pike  
 Knoxville, Tennessee 37921  
 Telephone: (423) 588-6401.

Split samples collected for the USACE laboratory will be shipped to the following address:

USACE South Atlantic Division Laboratory  
 Attn: Sample Receiving  
 611 South Cobb Drive  
 Marietta, Georgia 30060  
 Telephone: (770) 919-5270.

Table 4-4

**Analytical Samples  
Site Investigation  
Fill Area North of Landfill No. 2, Parcel 230(7)  
Fort McClellan, Calhoun County, Alabama**

Parameters	Analysis Method	Sample Matrix	TAT Needed	Field Samples			QA/QC Samples <sup>a</sup>					Quanterra	QA Lab	
				No. of Sample Points	No. of Events	No. of Field Samples	Field Dups (10%)	Splits w/ QA Lab (5%)	MS/MSD (5%)	Trip Blank (1/ship)	Eq. Rinse (1/wk/matrix)	Total No. Analysis	Total No. Analysis	
Fill Area North of Landfill No. 2: 9 water matrix samples (3 groundwater samples, 3 surface samples and 3 seep water samples); 20 soil matrix samples (7 surface soil samples, 7 subsurface sample, 3 sediment samples, and 3 depositional soil samples)														
TCL VOCs	8260B	water	normal	9	1	9	1	1	1	2	1	15	1	
TCL SVOCs	8270C	water	normal	9	1	9	1	1	1		1	13	1	
CI Pesticides	8081A	water	normal	9	1	9	1	1	1		1	13	1	
PCBs	8082	water	normal	9	1	9	1	1	1		1	13	1	
OP Pesticides	8141A	water	normal	9	1	9	1	1	1		1	13	1	
CI Herbicides	8151A	water	normal	9	1	9	1	1	1		1	13	1	
Tot TAL Metals	6010B/7000	water	normal	9	1	9	1	1	1		1	13	1	
Nitroexplosives	Method 8330	water	normal	9	1	9	1	1	1		1	13	1	
TCL VOCs	8260B	soil	normal	20	1	20	2	1	1		1	25	1	
TCL SVOCs	8270C	soil	normal	20	1	20	2	1	1		1	25	1	
CI Pesticides	8081A	soil	normal	20	1	20	2	1	1		1	25	1	
PCBs	8082	soil	normal	20	1	20	2	1	1		1	25	1	
OP Pesticides	8141A	soil	normal	20	1	20	2	1	1		1	25	1	
CI Herbicides	8151A	soil	normal	20	1	20	2	1	1		1	25	1	
TAL Metals	6010B/7000	soil	normal	20	1	20	2	1	1		1	25	1	
Nitroexplosives	Method 8330	soil	normal	20	1	17	2	1	1		1	22	2	
TOC	9060	sediment	normal	3	1	3						3	0	
Grain Size	ASTM D-421/D-422	sediment	normal	3	1	3						3	0	
Fill Area North of Landfill No. 2 Subtotal:							235	24	16	16	2	16	309	17

<sup>a</sup>Field duplicate, QA split, and MS/MSD samples were calculated as a percentage of the field samples collected per site and were rounded to the nearest whole number. Trip blank samples will be collected in association with water matrix samples for VOC analysis only. Assumed four field samples per day to estimate trip blanks. Equipment blanks will be collected once per event whenever sampling equipment is field decontaminated and re-used. They will be repeated weekly for sampling events that are anticipated to last more than 1 week. Assumed 20 field samples will be collected per week to estimate number of equipment blanks.

Ship samples to:

Quanterra Environmental Services  
5815 Middlebrook Pike  
Knoxville, Tennessee 37921  
Attn: John Reynolds  
Tel: 423-588-6401  
Fax: 423-584-4315

USACE laboratory split samples  
are shipped to:

USACE South Atlantic Division Laboratory  
Attn: Sample Receiving  
611 South Cobb Drive  
Marietta, Georgia 30060-3112  
Tel: 770-919-5270

QA/QC - Quality assurance/quality control.  
MS/MSD - Matrix spike/matrix spike duplicate.  
VOC - Volatile organic compound.  
SVOC - Semivolatile organic compound.

TAL - Target analyte list.  
Pest - Pesticides.  
CI - Chlorinated.  
OP - Organophosphorus.

TOC - Total organic carbon.  
CA - Chemical agent.  
TCL - Target compound list.  
PCB - Polychlorinated biphenyls.

#### ***4.8 Investigation-Derived Waste Management***

Management and disposal of the investigation-derived wastes (IDW) will follow procedures and requirements as described in Appendix D of the SAP. The IDW expected to be generated at the Fill Area North of Landfill No. 2, Parcel 230(7) will include decontamination fluids and disposable personal protective equipment. The IDW will be staged in the fenced area surrounding Buildings 335 and 336 while awaiting analytical results prior to final disposal.

#### ***4.9 Site-Specific Safety and Health***

Safety and health requirements for this SI are provided in the SSHP attachment for the Fill Area North of Landfill No. 2, Parcel 230(7). The SSHP attachment will be used in conjunction with the SHP.

## ***5.0 Project Schedule***

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The project schedule for the SI activities is provided by the IT project manager to the Base Realignment and Closure Cleanup Team on a monthly basis.

## 6.0 References

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Environmental Science and Engineering Inc. (ESE), 1998, ***Final Environmental Baseline Survey, Fort McClellan, Alabama***, prepared for U.S. Army Environmental Center, Aberdeen Proving Ground, Maryland, January.

Fort McClellan (FTMC), 1997, ***Fort McClellan Comprehensive Reuse Plan***, prepared under contract to the Calhoun County Commission, November

IT Corporation (IT), 1998a, ***Final Installation-Wide Sampling and Analysis Plan, Fort McClellan, Calhoun County, Alabama***, August.

IT Corporation (IT), 1998b, ***Final Installation-Wide Work Plan, Fort McClellan, Calhoun County, Alabama***, August.

IT Corporation (IT), 1998c, Letter to Ellis Pope from Jeanne Yacoub, "Procedures for Temporary Residuum Monitoring Well Installation, Conversion, and Abandonment", November.

U.S. Army Corps of Engineers (USACE), 1998, ***Statement of Work for Task Order CK005, Modification No. 1, Site Investigations at Fort McClellan, Alabama, Including Ecological Screening Sites (Creeks and Tribs), and Removal of Indoor Firing Ranges***, May.

U.S. Army Corps of Engineers (USACE), 1994, ***Requirements for the Preparation of Sampling and Analysis Plans***, Engineer Manual EM 200-1-3, September 1

U.S. Department of Agriculture (USDA), 1961, ***Soil Survey, Calhoun County, Alabama***, USDA Soil Conservation Service in cooperation with Alabama Department of Agriculture and Industries, Alabama Agricultural Experiment Station, Series 1958, No.9, September.

U.S. Environmental Protection Agency (EPA), 1993, ***Data Quality Objectives Process for Superfund, Interim Final Guidance***, EPA 540-R-93-071, September.

**Site Investigation**  
**Final**  
**Site-Specific Field Sampling Plan Attachment**  
**for the Cleared Area with Mound, Choccolocco Corridor**  
**Parcel 237(7)**

**Fort McClellan**  
**Calhoun County, Alabama**

**Prepared for:**

**U.S. Army Corps of Engineers, Mobile District**  
**109 St. Joseph Street**  
**Mobile, Alabama 36602**

**Prepared by:**

**IT Corporation**  
**312 Directors Drive**  
**Knoxville, Tennessee 37923**

**Delivery Order CK005**  
**Contract No. DACA21-96-D-0018**  
**IT Project No. 774645**

**December 1998**

**Revision 1**

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## ***List of Acronyms***

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ADEM	Alabama Department of Environmental Management
CLP	Contract Laboratory Program
CERFA	Community Environmental Response Facilitation Act
CESAS	Corps of Engineers South Atlantic Savannah
CSEM	conceptual site exposure model
DOD	U.S. Department of Defense
DQO	data quality objective
EBS	environmental baseline survey
EPA	U.S. Environmental Protection Agency
EPIC	Environmental Photographic Interpretation Center
ESE	Environmental Science and Engineering, Inc.
FTMC	Fort McClellan
GPS	global positioning system
IDW	investigation-derived waste
IT	IT Corporation
PID	photoionization detector
PSSC	potential site-specific chemical
QA/QC	quality assurance/quality control
QAP	installation-wide quality assurance plan
SAP	installation-wide sampling and analysis plan
SFSP	site-specific field sampling plan
SHP	installation-wide safety and analysis plan
SI	site investigation
SSHP	site-specific safety and health plan
USACE	U.S. Army Corps of Engineers
WP	installation-wide work plan

## ***Executive Summary***

---

In accordance with Contract No. DACA21-96-D-0018, Delivery Order CK005, IT Corporation (IT) will conduct site investigation activities at the Cleared Area with Mound, Choccolocco Corridor, Parcel 237(7) at Fort McClellan, Calhoun County, Alabama, to determine the presence or absence of potential site-specific chemicals (PSSC) at this site. The purpose of this site-specific field sampling plan (SFSP) is to provide technical guidance for sampling activities at the Cleared Area with Mound, Choccolocco Corridor, Parcel 237(7).

The Cleared Area with Mound, Choccolocco Corridor, Parcel 237(7) is located on the eastern lower slope of the Choccolocco Mountains in the center of the Choccolocco Corridor (Figure 1-1). The site is approximately one-half mile southeast of the junction of Bains Gap Road with Alabama State Route No. 9 (Figure 1-2). The site is approximately 4 miles north of Choccolocco, Alabama. The site is a cleared area with dense ground vegetation located off a dirt road in a heavily wooded area. A mound within a cleared area (ground scar) was identified by Environmental Photographic Interpretation Center (U.S. Environmental Protection Agency, 1998). This site and the surrounding area are within a wildlife management area managed by the Alabama Game and Fish Division. There is no documentation available regarding the type of material that may have been placed at this location and there are no previous investigations at this site identified in the environmental baseline survey conducted by Environmental Science and Engineering, Inc. (ESE, 1998).

IT will collect six surface soil samples and six subsurface soil samples at this site. Contaminant sources at the site are basically unknown. Because the site is a potential military operations and/or dump site, chemical analyses of the samples collected during the field program will include volatile organic compounds, semivolatile organic compounds, metals, chlorinated pesticides, polychlorinated biphenyls, chlorinated herbicides, organophosphorus pesticides and nitroexplosives. Results from these analyses will be compared with background concentrations and site-specific screening levels specified in the installation wide work plan (WP), and regulatory agency contaminant guidelines.

This SFSP attachment to the installation-wide sampling and analysis plan (SAP) (IT, 1998a) for the Cleared Area with Mound, Choccolocco Corridor, Parcel 237(7) will be used in conjunction with the site-specific safety and health plan (SSHP), and the installation-wide WP (IT, 1998b)

and SAP. The SAP includes the installation-wide safety and health plan, waste management plan, and quality assurance plan. Site-specific hazard analyses are included in the SSHP.

## **1.0 Project Description**

---

### **1.1 Introduction**

The U.S. Army is conducting studies of the environmental impact of suspected contaminants at Fort McClellan (FTMC) in Calhoun County, Alabama, under the management of the U.S. Army Corps of Engineers (USACE)-Mobile District. The USACE has contracted IT Corporation (IT) to provide environmental services for the site investigation (SI) of the Cleared Area with Mound, Choccolocco Corridor, Parcel 237(7), under Delivery Order CK005, Contract No. DACA21-96-D-0018.

This site-specific field sampling plan (SFSP) attachment to the installation-wide sampling and analysis plan (SAP) (IT, 1998a) for FTMC has been prepared to provide technical guidance for sample collection and analysis at the Cleared Area with Mound, Choccolocco Corridor, Parcel 237(7) site. This SFSP will be used in conjunction with the site-specific safety and health plan (SSHP) developed for the Cleared Area with Mound, Choccolocco Corridor, Parcel 237(7) site, and the installation-wide work plan (WP) (IT, 1998b) and SAP. The SAP includes the installation-wide safety and health plan (SHP), waste management plan, and quality assurance plan (QAP).

### **1.2 Site Description**

The Cleared Area with Mound, Choccolocco Corridor, Parcel 237(7) is located on the eastern lower slope of the Choccolocco Mountains in the center of the Choccolocco Corridor (Figure 1-1). The site is approximately one-half mile southeast of the junction of Bains Gap Road with Alabama State Route No. 9 (Figure 1-2). The site is approximately 4 miles north of Choccolocco, Alabama. The site is a cleared area with dense ground vegetation located off a dirt road in a heavily wooded area. A mound within a cleared area (ground scar) was identified by the Environmental Photographic Interpretation Center (EPIC) on the January 8, 1972 (Figure 5B) and March 8, 1982 (Figure 6B) aerial photographs contained in the document *Installation Assessment, Army Closure Program, Fort McClellan, Anniston, Alabama (TS-PIC-89334)* (U.S. Environmental Protection Agency [EPA], 1990). This site and the surrounding area are within a wildlife management area managed by the Alabama Game and Fish Division. There is no documentation available regarding the activities at this location (Environmental Science and Engineering, Inc. [ESE], 1998).

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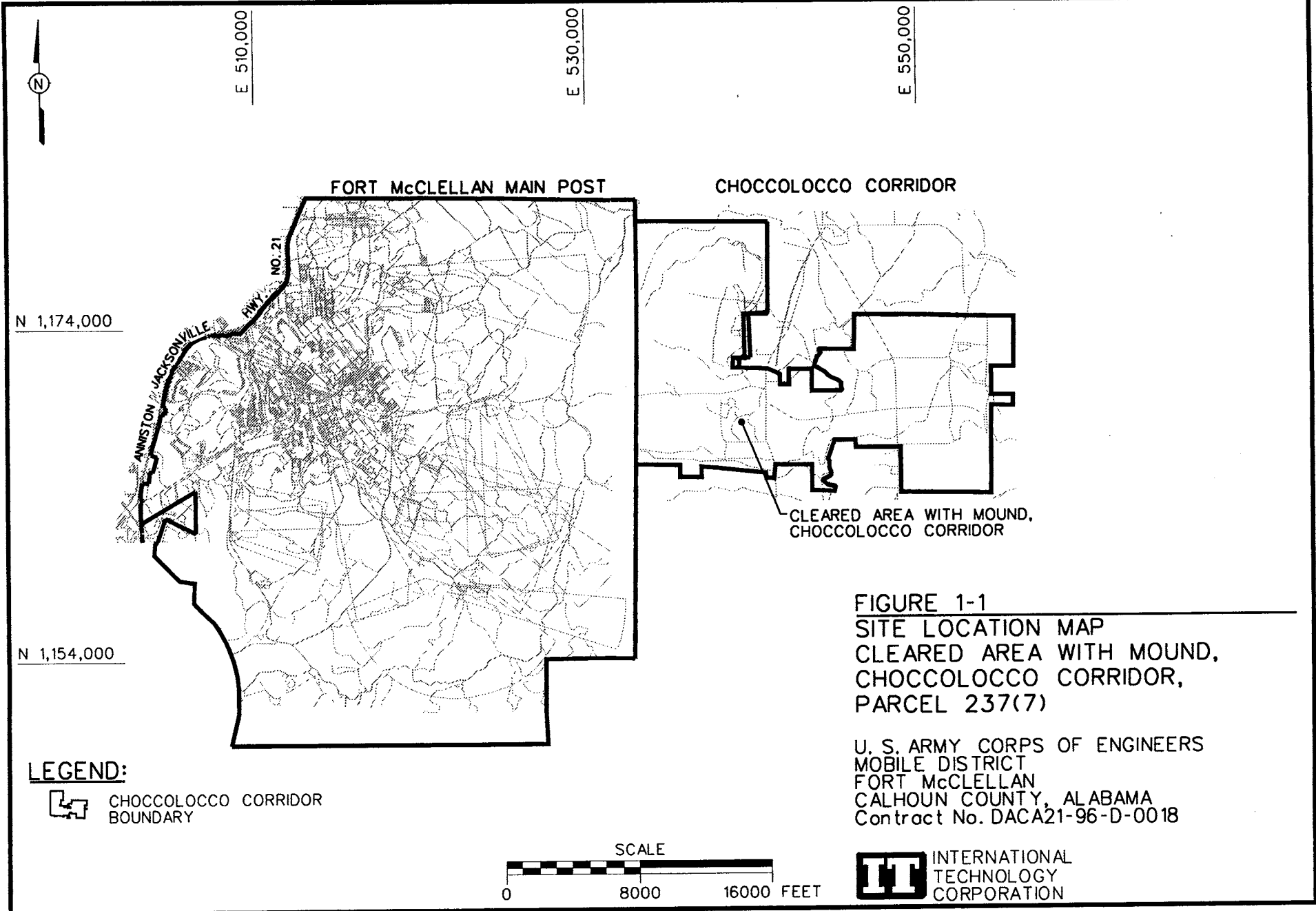
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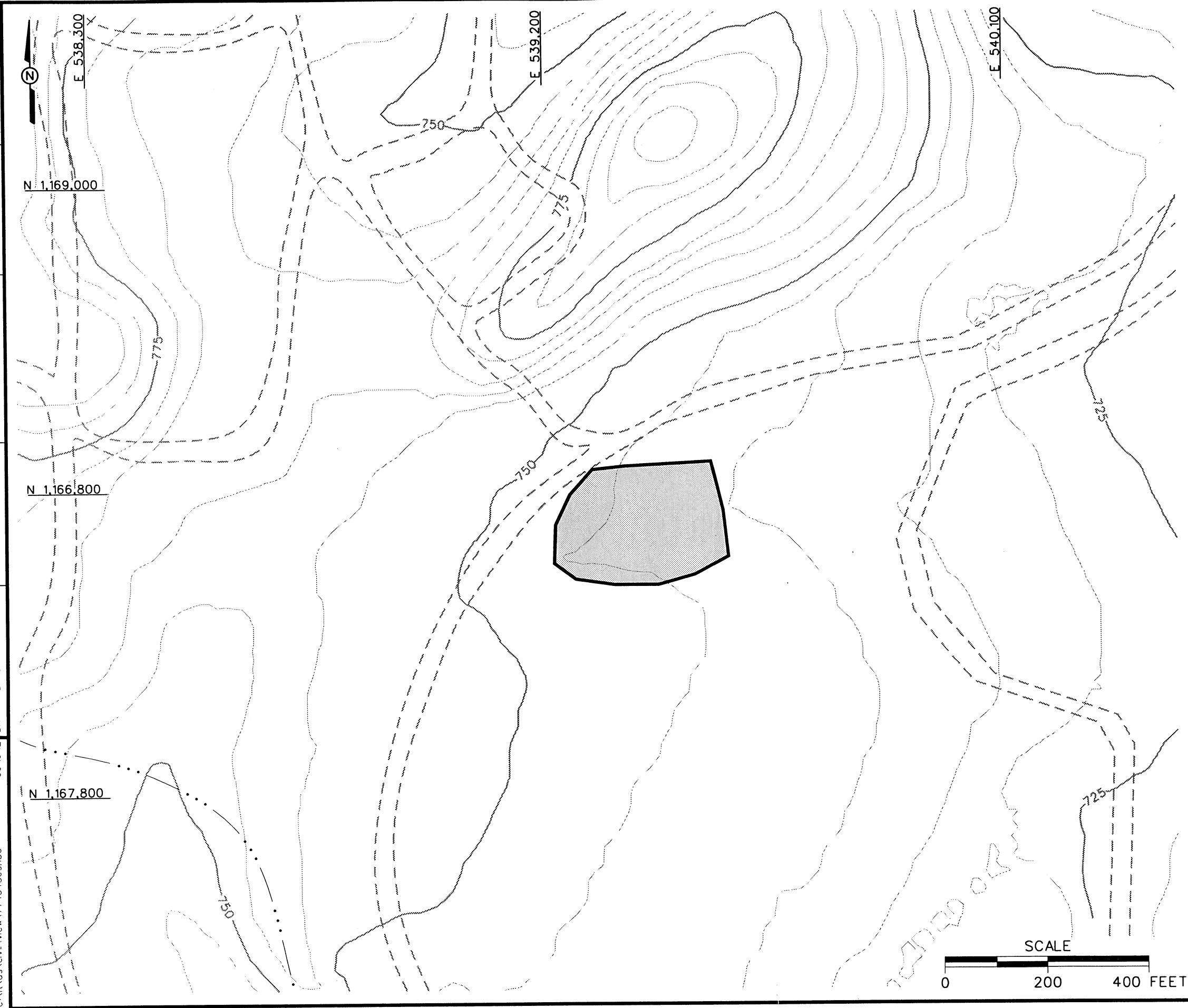
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PROJ. MGR.: J. YACOB

PROJ. NO.: 774645





**LEGEND**

- UNIMPROVED ROADS AND PARKING
- PAVED ROADS AND PARKING
- TOPOGRAPHIC CONTOURS
- PARCEL BOUNDARY
- SURFACE DRAINAGE / CREEK
- MANMADE SURFACE DRAINAGE FEATURE

**FIGURE 1-2**  
**SITE MAP**  
**CLEARED AREA WITH MOUND,**  
**CHOCOLOCOCO CORRIDOR,**  
**PARCEL 237(7)**  
  
U. S. ARMY CORPS OF ENGINEERS  
MOBILE DISTRICT  
FORT McCLELLAN  
CALHOUN COUNTY, ALABAMA  
Contract No. DACA21-96-D-0018  
  
**IT** INTERNATIONAL  
TECHNOLOGY  
CORPORATION



The Cleared Area with Mound, Choccolocco Corridor site covers approximately 2 acres. The elevation of the site is approximately 750 feet. Shallow groundwater direction at the site is probably controlled by topography and is probably to the east. The soils found at this site are composed of the Jefferson series soils. The depth to bedrock typically ranges from 2 feet to greater than 4 feet. The depth to the water table for this series is usually greater than 20 feet.

The Jefferson series soils at this site typically consist of 1.5 to 4 feet of well-drained, strongly acid soils that occur in small areas on fans and on foot slopes in the Choccolocco, Colvin, and Coldwater Mountains (U.S. Department of Agriculture [USDA], 1961). These soils have developed from old local alluviums that washed or sloughed from ridges of sandstone, shale and Weisner quartzite. The surface soil is dark-grayish-brown fine sandy loam, and the subsoil is yellowish-brown, light fine sandy clay. Fragments as large as 8 inches in diameter are on the surface and throughout the soil.

Soils at this site fall into the Jefferson gravelly fine sandy loam, 2 to 6 percent slopes, eroded (JeB2) (USDA, 1961). This mapping unit is friable soil developed from old local alluvium on foot slopes and fans along ridges and mountains.

### ***1.3 Scope of Work***

The scope of work for activities associated with the SI at the Cleared Area with Mound, Choccolocco Corridor, Parcel 237(7), specified by the statement of work (USACE, 1998), includes the following tasks:

- Develop the SFSP attachment.
- Develop the SSHP attachment.
- Collect six surface soil samples and six subsurface soil samples to determine whether potential site-specific chemicals (PSSC) are present at the Cleared Area with Mound, Choccolocco Corridor, Parcel 237(7) and to provide data to determine any future planned corrective measures and closure activities.

At completion of the field activities and sample analyses, draft and final SI summary reports will be prepared to evaluate the absence or presence of PSSC at this site, and to recommend further actions, if appropriate.

## ***2.0 Summary of Existing Environmental Studies***

---

An environmental baseline survey (EBS) was conducted by ESE to document current environmental conditions of all FTMC property (ESE, 1998). The study was to identify sites that, based on available information, have no history of contamination and comply with U.S. Department of Defense (DOD) guidance for fast-track cleanup at closing installations. The EBS also provides a baseline picture of FTMC properties by identifying and categorizing the properties by seven criteria.

1. Areas where no storage, release, or disposal (including migration) has occurred.
2. Areas where only storage has occurred.
3. Areas of contamination below action levels.
4. Areas where all necessary remedial actions have been taken.
5. Areas of known contamination with removal and/or remedial action underway.
6. Areas of known contamination where required response actions have not been taken.
7. Areas that are not evaluated or require further evaluation.

The EBS was conducted in accordance with the Community Environmental Response Facilitation Act (CERFA) (CERFA-Public Law 102-426) protocols and DOD policy regarding contamination assessment. Record searches and reviews were performed on all reasonably available documents from FTMC, Alabama Department of Environmental Management (ADEM), EPA Region IV, and Calhoun County, as well as a database search of Comprehensive Environmental Response, Compensation, and Liability Act-regulated substances, petroleum products, and Resource Conservation and Recovery Act-regulated facilities. Available historic maps and aerial photographs were reviewed to document historic land uses. Personal and telephone interviews of past and present FTMC employees and military personnel were conducted. In addition, visual site inspections were conducted to verify conditions of specific property parcels.

There are no previous investigations at this site identified in the EBS (ESE, 1998). The Cleared Area with Mound, Choccolocco Corridor, Parcel 237(7) is identified as a CERFA site. This CERFA parcel is a Category 7 area. The site comprises an observed ground scar with a mound (EPA, 1990) that may have been the site of military operations. PSSCs may have been released

onto the site or to the environment, as materials were disposed of on site property. The Cleared Area with Mound, Choccolocco Corridor, Parcel 237(7) lacks adequate documentation and, therefore, requires additional evaluation to determine the environmental condition of the parcel.

## **3.0 Site-Specific Data Quality Objectives**

---

### **3.1 Overview**

The data quality objectives (DQO) process is followed to establish data requirements and to support the decision-making process associated with the action selection for the Cleared Area with Mound, Choccolocco Corridor, Parcel 237(7). This section incorporates the components of the DQO process described in the EPA publication EPA 540-R-93-071 *Data Quality Objectives Process for Superfund* (EPA, 1993). The DQO process as applied to the Cleared Area with Mound, Choccolocco Corridor, Parcel 237(7) is described in more detail in Section 4.3 of the WP. Table 3-1 provides a summary of the factors used to determine the appropriate quantity of samples and the procedures necessary to meet the objectives of the SI and establish a basis for future action at this site.

The samples will be analyzed using EPA SW-846 methods, including Update III Methods where applicable, as presented in Chapter 4.0 in this SFSP and Table 6-1 in the QAP. Data will be reported and evaluated in accordance with Corps of Engineers South Atlantic Savannah (CESAS) Level B criteria (USACE, 1994) and the stipulated requirements for the generation of definitive data (Section 3.1.2 of the QAP). Chemical data will be reported by the laboratory in Contract Laboratory Program (CLP)-like forms. These packages will be validated in accordance with EPA National Functional Guidelines by Level III criteria.

### **3.2 Data Users and Available Data**

The intended data users and available data related to the SI at the Cleared Area with Mound, Choccolocco Corridor, Parcel 237(7), presented in Table 3-1, have been used to formulate a site-specific conceptual model presented in Section 3.3. This conceptual model was developed to support the preparation of this SFSP, which is necessary to meet the objectives of these activities and to establish a basis for future action at the site. The data users for the data and information generated during field activities are primarily EPA, USACE, ADEM, FTMC, and the USACE supporting contractors. This SFSP, along with the necessary companion documents, has been designed to provide the regulatory agencies with sufficient detail to reach a determination as to the adequacy of the scope of work. The program has also been designed to provide the level of defensible data and information required to confirm or rule out the existence of residual PSSCs in the site media.

Table 3-1

**Summary of Data Quality Objectives**  
**Site Investigation**  
**Cleared Area with Mound, Choccolocco Corridor, Parcel 237(7)**  
**Fort McClellan, Calhoun County, Alabama**

Potential Data Users	Available Data	Conceptual Site Model	Media of Concern	Data Uses and Objectives	Data Types	Analytical Level	Data Quantity
EPA, ADEM USACE, DOD, FTMC, IT Corporation Other contractors, and possible future land users	None	<u>Contaminant Source</u> Unknown historical use of cleared area with mound. Possible military operations site.  <u>Migration Pathways</u> Infiltration and leaching to sub- surface soil and groundwater. VOC and dust emissions from soil to air, volatilization from ground- water to air, and biotransfer to venison.  <u>Potential Receptors</u> Recreational site user (current and future); venison consumption (current and future); resident (future)  <u>PSSC</u> Unknown	Surface soil  Subsurface Soil  Groundwater	SI to determine the presence or absence of contaminants in the site media   Definitive quality data for future decision- making	<u>Surface soil</u> TCL VOCs, TCL SVOCs, TAL Metals, Chlorinated Pesticides, PCBs, Chlorinated Herbicides, Organophosphorus Pesticides, Nitroexplosives	Definitive data in CESAS Level B data packages	6 direct-push soil samples + QC
					<u>Subsurface Soil</u> TCL VOCs, TCL SVOCs, TAL Metals, Chlorinated Pesticides, PCBs, Chlorinated Herbicides, Organophosphorus Pesticides, Nitroexplosives	Definitive data in CESAS Level B data packages	6 direct-push soil samples + QC

ADEM - Alabama Department of Environmental Management.

CESAS - Corps of Engineers South Atlantic Savannah.

DOD - U.S. Department of Defense.

EPA - U.S. Environmental Protection Agency.

FTMC - Fort McClellan.

PCB - Polychlorinated biphenyl.

PSSC - Potential site-specific chemical.

QC - Quality control.

VOC - Volatile organic compound.

SVOC - Semivolatile organic compound.

TAL - Target analyte list.

TCL - Target compound list.

USACE - U.S. Army Corps of Engineers.

### **3.3 Conceptual Site Exposure Model**

The conceptual site exposure model (CSEM) provides the basis for identifying and evaluating the potential risks to human health in the risk assessment. The CSEM includes the receptors appropriate to all plausible scenarios, and the potential exposure pathways. Graphically presenting possible pathways by which a potential receptor may be exposed, including sources, release and transport pathways, and exposure routes, facilitates consistent and comprehensive evaluation of risk to human health, and helps to ensure that potential pathways are not overlooked. The elements necessary to construct a complete exposure pathway and develop the CSEM include:

- Source (i.e., contaminated environmental) media
- Contaminant release mechanisms
- Contaminant transport pathways
- Receptors
- Exposure pathways.

Contaminant release mechanisms and transport pathways are not relevant for direct receptor contact with a contaminated source medium.

The Cleared Area with Mound is considered a potential military operation site, but documentation regarding the nature of activities or potential for contaminant release is not available. Primary contaminant release was potentially to surface soil, although contaminants may be buried in the reported mound. Potential contaminant transport pathways include infiltration to subsurface soil, biotransfer to venison, and fugitive dust emissions and volatilization from groundwater to air. Infiltration and leaching to groundwater are also potentially complete transfer pathways. Groundwater is not being sampled and analyzed at this time. If PSSCs are identified in the soil samples, additional investigation may be conducted to assess potential impact to groundwater quality.

The Cleared Area with Mound is located in a wildlife management area, is heavily vegetated, and is surrounded by heavy woods. The area is a habitat for wildlife and likely harbor deer, which may be hunted in season. Thus, plausible current receptor scenarios consist of the recreational site user and venison consumption. Site use and plausible receptor scenarios are likely to remain the same in the future (FTMC, 1997). Other receptor scenarios considered but not included in this evaluation are:

- Fish consumption: There are no areas associated with this site that are subject to fishing.

- Groundskeeper: The area is not currently developed for commercial/industrial use. It is very unlikely that the area will be developed for commercial or industrial use in the future.
- Construction worker: The area is not currently developed and future construction is unlikely given the location of the site within a state-operated wildlife management area.

Contaminant release and transport mechanisms, source and exposure media, receptors, and exposure pathways are summarized in Figure 3-1 and Table 3-1.

### ***3.4 Decision-Making Process, Data Uses, and Needs***

The decision-making process consists of a seven-step process that is presented in detail in Section 4.3 of the WP and will be followed during the SI at the Cleared Area with Mound, Choccolocco Corridor, Parcel 237(7). Data uses and needs are summarized in Table 3-1.

#### ***3.4.1 Risk Evaluation***

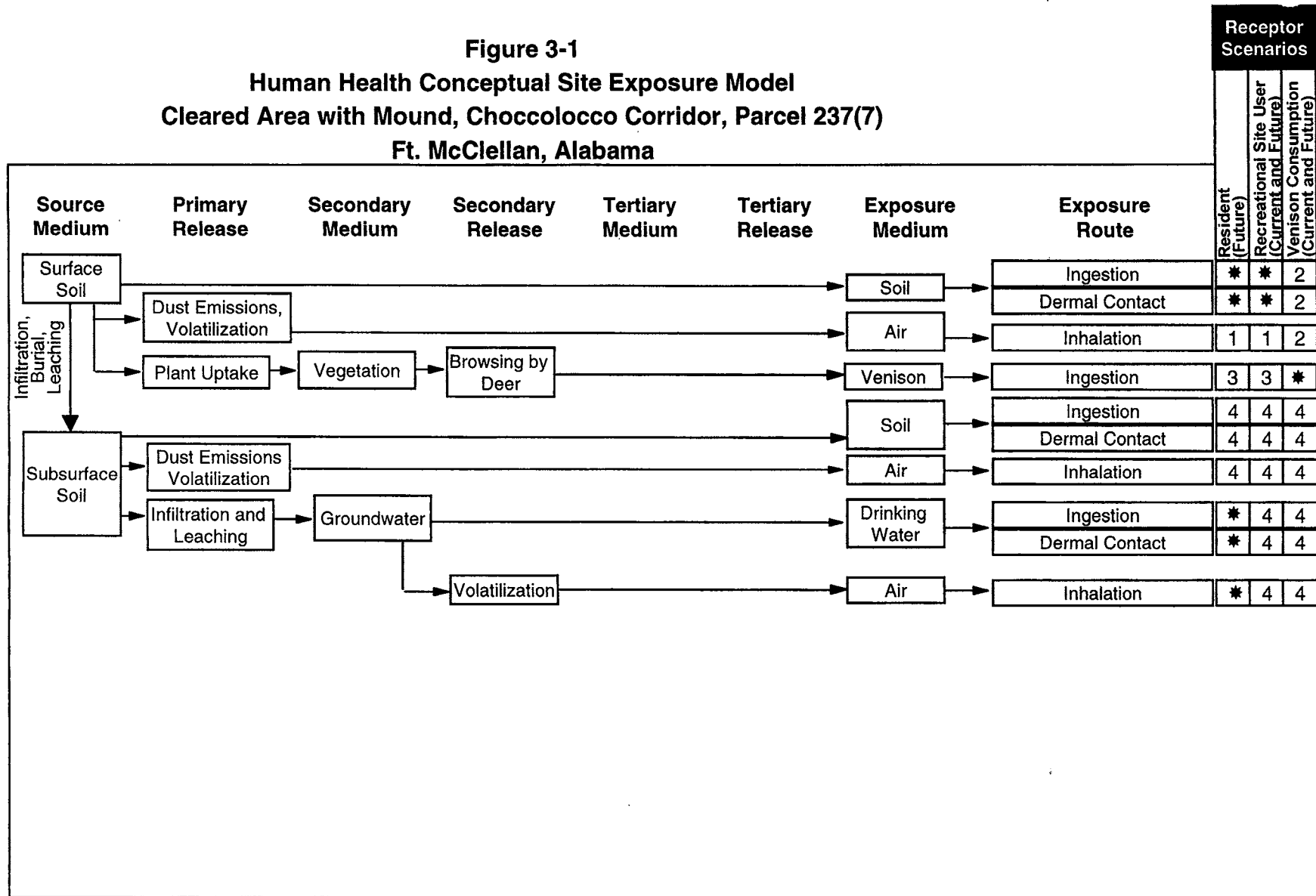
Confirmation of contamination at the Cleared Area with Mound, Choccolocco Corridor, Parcel 237(7), will be based on comparing detected site chemical concentrations with site-specific screening levels and background concentrations developed in the WP (IT, 1998b). EPA definitive data with CESAS Level B data packages will be used to achieve detection limits sufficient to determine whether or not the established guidance criteria are exceeded in site media. Definitive data will be adequate for confirming the presence of site contamination and for supporting a feasibility study and risk assessment.

Assessment of potential ecological risk associated with sites or parcels (e.g., surface water and sediment sampling, specific ecological assessment methods, etc.) will be addressed in the WP.

#### ***3.4.2 Data Types and Quality***

Surface soil and subsurface soil will be sampled and analyzed in order to meet the objectives of the SI at the Cleared Area with Mound, Choccolocco Corridor, Parcel 237(7). Quality assurance/quality control (QA/QC) samples will be collected for all sample types as described in Chapter 4.0 of this SFSP. Samples will be analyzed by EPA-approved SW-846 methods, where available; comply with EPA definitive data requirements; and be reported using hard copy data packages. In addition to meeting the quality needs of this SI, data analyzed at this level of quality are appropriate for all phases of site characterization, remedial investigation, and risk assessment.

**Figure 3-1**  
**Human Health Conceptual Site Exposure Model**  
**Cleared Area with Mound, Choccolocco Corridor, Parcel 237(7)**  
**Ft. McClellan, Alabama**



\* = Complete exposure pathway quantified in SSSL development.

1 = Volatilization from undisturbed surface soil deemed insignificant; soil is likely to be paved or vegetated, reducing dust emissions to insignificant levels; inhalation pathway not quantified.

2 = This scenario is created to assess indirect (food chain) exposure to surface soil, surface water and sediment.

3 = Evaluated under venison and fish consumption scenario.

4 = Incomplete exposure pathway.



### ***3.4.3 Precision, Accuracy, and Completeness***

Laboratory requirements of precision, accuracy, and completeness for this SI are provided in Chapter 9.0 of the QAP.

## **4.0 Field Activities**

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### **4.1 Utility Clearances**

Prior to performing any intrusive sampling, a utility clearance will be performed at all locations where soil and groundwater samples will be collected, using the procedure outlined in Section 4.2.6 of the SAP (IT, 1998a). The site manager will mark the proposed locations with stakes, coordinate with the installation to clear the proposed locations for utilities, and obtain digging permits. Once the locations are cleared, the stakes will be labeled as cleared.

### **4.2 Environmental Sampling**

The environmental sampling program during the SI at the Cleared Area with Mound, Choccolocco Corridor, Parcel 237(7) includes the collection of six surface soil samples and six subsurface soil samples for chemical analyses. These samples will be collected and analyzed to provide data for characterizing the site to determine the environmental condition of the site and any further action to be conducted at the site.

#### **4.2.1 Surface Soil Sampling**

Surface soil samples will be collected from six soil borings installed at the Cleared Area with Mound, Choccolocco Corridor, Parcel 237(7).

##### **4.2.1.1 Sampling Locations and Rationale**

The surface soil sampling rationale is provided in Table 4-1. Proposed sampling locations are shown on Figure 4-1. Surface soil sample designations, depths, and required quality assurance/quality control (QA/QC) sample quantities are listed in Table 4-2. The exact surface soil sampling locations will be determined in the field by the on-site geologist based on actual field conditions.

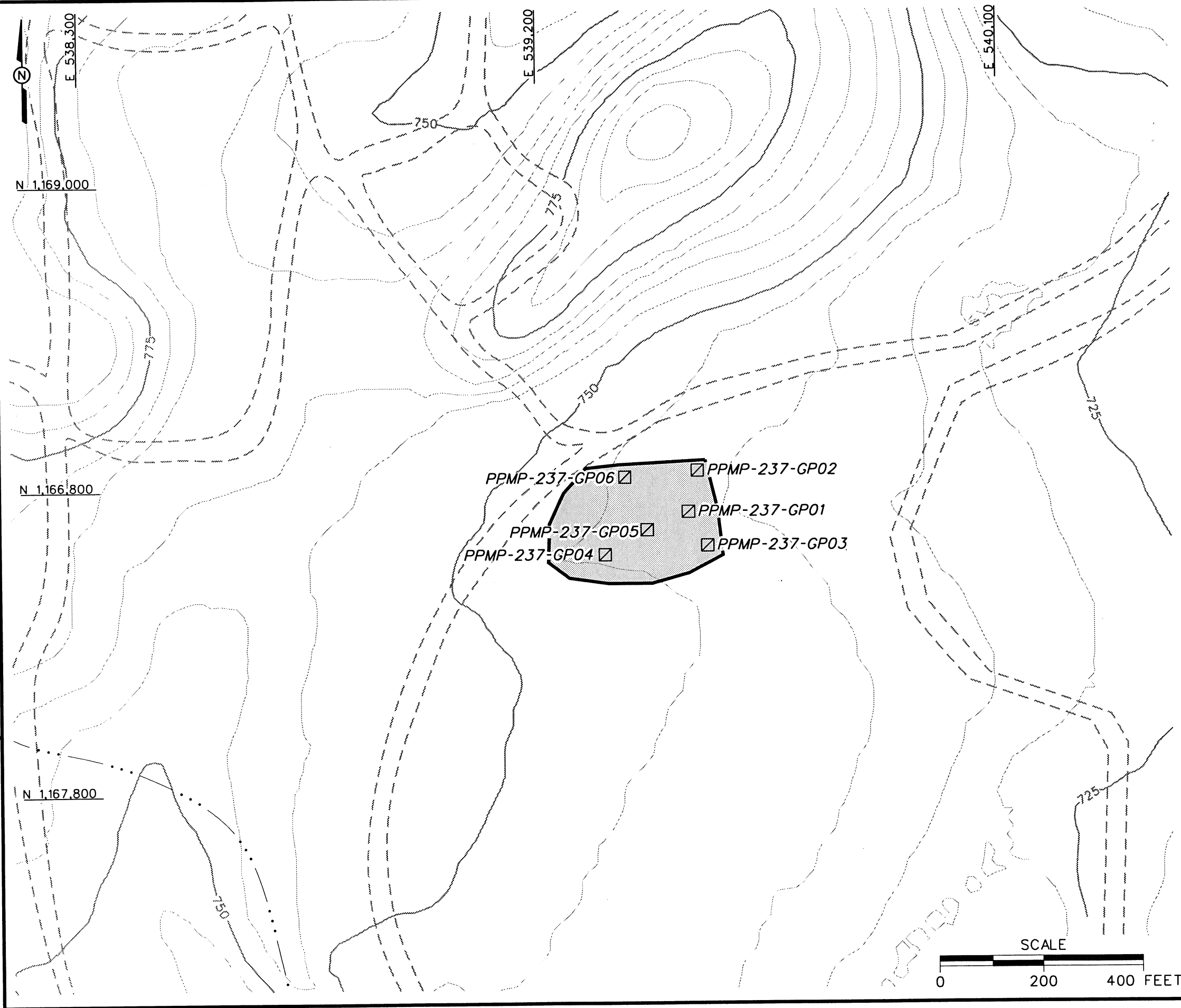
##### **4.2.1.2 Sample Collection Procedures**

Surface soil samples will be collected from the upper 1 foot of soil by direct-push technology in accordance with the procedures specified in Section 4.7.1.1 of the SAP (IT, 1998a). Collected soil samples will be screened using a photoionization detector (PID) in accordance with Section 4.15 of the SAP. Sample containers, sample volumes, preservatives, and holding times for the analyses required in this SFSP are listed in Section 5.0, Table 5-1 of the QAP. Sample documentation and chain of custody will be recorded as specified in Section 4.13 of the SAP. The samples will be analyzed for the parameters listed in Section 4.5 of this SFSP.

**Table 4-1**

**Sample Locations And Rationale  
Cleared Area with Mound, Choccolocco Corridor, Parcel 237(7)  
Fort McClellan, Calhoun County, Alabama**

<b>Sample Location</b>	<b>Sample Media</b>	<b>Sample Location Rationale</b>
PPMP-237-GP01	Surface soil and subsurface soil	Soil boring to be placed downgradient in the center of the Cleared Area for collection of surface and subsurface soil samples. Sample data will indicate if potential site-specific chemical (PSSC) releases have occurred from historical use of the area and if contaminated materials and soil exists in this site.
PPMP-237-GP02	Surface soil and subsurface soil	Soil boring to be placed in the northeastern corner of the Cleared Area for collection of surface and subsurface soil samples. Sample data will indicate if PSSC releases have occurred from historical use of the area and if contaminated materials and soil exists in this site.
PPMP-237-GP03	Surface soil and subsurface soil	Soil boring to be placed in the southeastern corner of the Cleared Area for collection of surface and subsurface soil samples. Sample data will indicate if PSSC releases have occurred from historical use of the area and if contaminated materials and soil exists in this site.
PPMP-237-GP04	Surface soil and subsurface soil	Soil boring to be placed in the southwestern section of the Cleared Area for collection of surface and subsurface soil samples. Sample data will indicate if PSSC releases have occurred from historical use of the area and if contaminated materials and soil exists in this site.
PPMP-237-GP05	Surface soil and subsurface soil	Soil boring to be placed in the center of the Cleared Area for collection of surface and subsurface soil samples. Sample data will indicate if PSSC releases have occurred from historical use of the area and if contaminated materials and soil exists in this site.
PPMP-237-GP06	Surface soil and subsurface soil	Soil boring to be placed in the northern center of the Cleared Area for collection of surface and subsurface soil samples. Sample data will indicate if PSSC releases have occurred from historical use of the area and if contaminated materials and soil exists in this site.



**LEGEND**

- UNIMPROVED ROADS AND PARKING
- PAVED ROADS AND PARKING
- TOPOGRAPHIC CONTOURS
- PARCEL BOUNDARY
- SURFACE DRAINAGE / CREEK
- MANMADE SURFACE DRAINAGE FEATURE
- PROPOSED SURFACE AND SUBSURFACE SOIL SAMPLE

**FIGURE 4-1**  
**PROPOSED SAMPLE LOCATIONS,**  
**CLEARED AREA WITH MOUND,**  
**CHOCCOLOCCO CORRIDOR**  
**PARCEL 237(7)**

U. S. ARMY CORPS OF ENGINEERS  
MOBILE DISTRICT  
FORT McCLELLAN  
CALHOUN COUNTY, ALABAMA  
Contract No. DACA21-96-D-0018

**IT** INTERNATIONAL  
TECHNOLOGY  
CORPORATION

Table 4-2

**Surface Soil and Subsurface Soil Sample Designations and QA/QC Sample Quantities  
Cleared Area with Mound, Choccolocco Corridor, Parcel 237(7)  
Fort McClellan, Calhoun County, Alabama**

Sample Location	Sample Designation	Sample Matrix	Sample Depth (ft)	QA/QC Samples			Analytical Suite
				Field Duplicates	Field Splits	MS/MSD	
PPMP-237-GP01	PPMP-237-GP01-SS-KDD0001-REG	soil	0-1	PPMP-237-GP01-SS-KDD0002-FD	PPMP-237-GP01-SS-KDD0003-FS		TCL VOCs, TCL SVOCs, TAL Metals, Chlorinated Pesticides, PCBs, Chlorinated Herbicides, Organophosphorus Pesticides, Nitroexplosives
	PPMP-237-GP01-DS-KDD0004-REG	soil	a				
PPMP-237-GP02	PPMP-237-GP02-SS-KDD0005-REG	soil	0-1			PPMP-237-GP02-SS-KDD0005-MS PPMP-237-GP02-SS-KDD0005-MSD	TCL VOCs, TCL SVOCs, TAL Metals, Chlorinated Pesticides, PCBs, Chlorinated Herbicides, Organophosphorus Pesticides, Nitroexplosives
	PPMP-237-GP02-DS-KDD0006-REG	soil	a				
PPMP-237-GP03	PPMP-237-GP03-SS-KDD0007-REG	soil	0-1				TCL VOCs, TCL SVOCs, TAL Metals, Chlorinated Pesticides, PCBs, Chlorinated Herbicides, Organophosphorus Pesticides, Nitroexplosives
	PPMP-237-GP03-DS-KDD0008-REG	soil	a				
PPMP-237-GP04	PPMP-237-GP04-SS-KDD0009-REG	soil	0-1				TCL VOCs, TCL SVOCs, TAL Metals, Chlorinated Pesticides, PCBs, Chlorinated Herbicides, Organophosphorus Pesticides, Nitroexplosives
	PPMP-237-GP04-DS-KDD0010-REG	soil	a				
PPMP-237-GP05	PPMP-237-GP05-SS-KDD0011-REG	soil	0-1				TCL VOCs, TCL SVOCs, TAL Metals, Chlorinated Pesticides, PCBs, Chlorinated Herbicides, Organophosphorus Pesticides, Nitroexplosives
	PPMP-237-GP05-DS-KDD0012-REG	soil	a				
PPMP-237-GP06	PPMP-237-GP06-SS-KDD0013-REG	soil	0-1				TCL VOCs, TCL SVOCs, TAL Metals, Chlorinated Pesticides, PCBs, Chlorinated Herbicides, Organophosphorus Pesticides, Nitroexplosives
	PPMP-237-GP06-DS-KDD0014-REG	soil	a				

\*Actual sample depth selected for analysis will be at the discretion of the site geologist and will be based on field observation.

FD - Field duplicate.

FS - Field split.

MS/MSD - Matrix spike/matrix spike duplicate.

QA/QC - Quality assurance/quality control.

REG - Field sample.

SVOC - Semivolatile organic compound.

TAL - Target analyte list.

TCL - Target compound list.

VOC - Volatile organic compound.

#### **4.2.2 Subsurface Soil Sampling**

Subsurface soil samples will be collected from six soil borings installed at the Cleared Area with Mound, Choccolocco Corridor, Parcel 237(7).

##### **4.2.2.1 Sample Locations and Rationale**

Subsurface soil samples will be collected from the six soil borings proposed on Figure 4-1. The subsurface soil sampling rationale is presented in Table 4-1. Subsurface soil sample designations, depths, and required QA/QC sample quantities are listed in Table 4-2. The exact soil boring sampling locations will be determined in the field by the on-site geologist based on actual field observations.

##### **4.2.2.2 Sample Collection Procedures**

Subsurface soil samples will be collected from soil borings at a depth greater than 1 foot below ground surface in the unsaturated zone. The soil borings will be advanced and soil sample collected using the direct-push sampling procedures specified in Section 4.7.1.1 of the SAP (IT, 1998).

Sample documentation and chain of custody will be recorded as specified in Section 4.13 of the SAP. Sample containers, sample volumes, preservatives, and holding times for the analyses required in this SFSP are listed in Section 5.0, Table 5-1 of the QAP. The samples will be analyzed for the parameters listed in Section 4.5 of this SFSP.

Soil samples will be collected continuously for the first 12 feet or until groundwater or refusal is reached. A detailed lithological log will be recorded by the on-site geologist for each borehole. At least one subsurface sample from each borehole will be selected for analyses. The collected subsurface soil samples will be field screened using a PID in accordance with Section 4.15 of the SAP to measure samples exhibiting elevated readings above background (ambient air).

Typically, the sample showing the highest reading (above background) will be selected and sent to the laboratory for analysis. If none of the samples collected indicate elevated readings above background using the PID, then the deepest interval collected will be submitted to the laboratory for analysis. Subsurface soil samples will be selected for analyses from any depth interval if the on-site geologist suspects PSSCs at the interval. Site conditions such as lithology may also determine the actual sample depth interval submitted for analyses. More than one subsurface soil sample will be collected if field measurements and observations indicate a possible layer of PSSCs and/or additional sample data would provide insight to the existence of any PSSCs.

### **4.3 Decontamination Requirements**

Decontamination will be performed on sampling and nonsampling equipment to prevent cross-contamination between sampling locations. Decontamination of sampling equipment will be performed in accordance with the requirements presented in Section 4.10.1.1 of the SAP.

Decontamination of nonsampling equipment will be performed in accordance with the requirements presented in Section 4.10.1.2 of the SAP.

### **4.4 Surveying of Sample Locations**

Sampling locations will be marked with pin flags, stakes, and/or flagging and will be surveyed using either global positioning system (GPS) or conventional civil survey techniques, as necessary to obtain the required level of accuracy. Horizontal coordinates will be referenced to the Alabama State Plane Coordinate System, 1983 North American Datum (NAD83). Elevations will be referenced to the National Geodetic Vertical Datum of 1929 or the North American Vertical Datum of 1988 (soon to be established on site). Horizontal coordinates for all soil sample locations will be recorded using a GPS to provide accuracy within 1 meter. Procedures to be used for GPS surveying are described in Section 4.3 of the SAP. Conventional land survey requirements are presented in Section 4.19 of the SAP.

### **4.5 Analytical Program**

Samples collected at locations specified in this chapter will be analyzed for the specific suites of chemicals and elements based on the history of site usage, as well as the EPA, ADEM, FTMC, and USACE requirements. Target analyses for samples collected from the Cleared Area with Mound, Choccolocco Corridor, Parcel 237(7) consist of the following list of analytical suites:

- Target Compound List Volatile Organic Compounds - Method 5035/8260B
- Target Compound List Semivolatile Organic Compounds - Method 8270C
- Target Analyte List Metals - Method 6010B/7000
- Chlorinated Pesticides - Method 8081A
- Polychlorinated Biphenyls - Method 8082
- Chlorinated Herbicides - Method 8051A
- Organophosphorus Pesticides - Method 8141A
- Nitroexplosives - Method 8330.

The samples will be analyzed using EPA SW-846 methods, including Update III Methods where applicable, as presented in Table 4-3 in this SFSP and Table 6-1 in the QAP. Data will be reported and evaluated in accordance with CESAS Level B criteria (USACE, 1994) and the

Table 4-3

**Analytical Samples  
Site Investigation  
Cleared Area with Mound, Choccolocco Corridor, Parcel 237(7)  
Fort McClellan, Calhoun County, Alabama**

Parameters	Analysis Method	Sample Matrix	TAT Needed	Field Samples			QA/QC Samples <sup>a</sup>					Quanterra	QA Lab
				No. of Sample Points	No. of Events	No. of Field Samples	Field Dups (10%)	Splits w/ QA Lab (5%)	MS/MSD (5%)	Trip Blank (1/ship)	Eq. Rinse (1/wk/matrix)	Total No. Analysis	Total No. Analysis
Cleared Area with Mound, Choccolocco Corridor: 12 soil matrix samples (6 surface soil samples and 6 subsurface soil samples)													
TCL VOCs	8260B	soil	normal	12	1	12	1	1	1		1	16	1
TCL SVOCs	8270C	soil	normal	12	1	12	1	1	1		1	16	1
CI Pesticides	8081A	soil	normal	12	1	12	1	1	1		1	16	1
PCBs	8082	soil	normal	12	1	12	1	1	1		1	16	1
OP Pesticides	8141A	soil	normal	12	1	12	1	1	1		1	16	1
CI Herbicides	8151A	soil	normal	12	1	12	1	1	1		1	16	1
TAL Metals	6010B/7000	soil	normal	12	1	12	1	1	1		1	16	1
Nitroexplosives	Method 8330	soil	normal	12	1	12	1	1	1		1	16	1
Cleared Area with Mound, Choccolocco Corridor:						96	8	8	8	0	8	128	8

<sup>a</sup>Field duplicate, QA split, and MS/MSD samples were calculated as a percentage of the field samples collected per site and were rounded to the nearest whole number. Trip blank samples will be collected in association with water matrix samples for VOC analysis only. Assumed four field samples per day to estimate trip blanks. Equipment blanks will be collected once per event whenever sampling equipment is field decontaminated and re-used. They will be repeated weekly for sampling events that are anticipated to last more than 1 week. Assumed 20 field samples will be collected per week to estimate number of equipment blanks.

Ship samples to:

Quanterra Environmental Services  
5815 Middlebrook Pike  
Knoxville, Tennessee 37921  
Attn: John Reynolds  
Tel: 423-588-6401  
Fax: 423-584-4315

USACE Laboratory split samples  
are shipped to:

USACE South Atlantic Division Laboratory  
Attn: Sample Receiving  
611 South Cobb Drive  
Marietta, Georgia 30060-3112  
Tel: 770-919-5270

CI - Chlorinated.  
MS/MSD - Matrix spike/matrix spike duplicate.  
OP - Organophosphorus.  
PCB - Polychlorinated biphenyls.  
Pest - Pesticides.  
QA/QC - Quality assurance/quality control.  
SVOC - Semivolatile organic compound.  
TAL - Target analyte list.  
TCL - Target compound list.  
VOC - Volatile organic compound.



stipulated requirements for the generation of definitive data (Section 3.1.2 of the QAP). Chemical data will be reported via hard copy data packages by the laboratory using CLP-like forms. These packages will be validated in accordance with EPA National Functional Guidelines by Level III criteria.

#### ***4.6 Sample Preservation, Packaging, and Shipping***

Sample preservation, packaging, and shipping will follow the procedures specified in Section 4.13.2 of the SAP. Completed analysis request/chain-of-custody records will be secured and included with each shipment of coolers to the following subcontract laboratory:

Sample Receiving  
Quanterra Environmental Services  
5815 Middlebrook Pike  
Knoxville, Tennessee 37921  
Telephone: (423) 588-6401.

Split samples collected for the USACE laboratory will be shipped to the following address:

USACE South Atlantic Division Laboratory  
Attn: Sample Receiving  
611 South Cobb Drive  
Marietta, Georgia 30060  
Telephone: (770) 919-5270.

#### ***4.7 Investigation-Derived Waste Management***

Management and disposal of the investigation-derived wastes (IDW) will follow procedures and requirements as described in Appendix D of the SAP (IT, 1998a). The IDW expected to be generated at the Cleared Area with Mound, Choccolocco Corridor, Parcel 237(7) will include decontamination fluids and disposable personal protective equipment. The IDW will be staged in the fenced area surrounding Buildings 335 and 336 while awaiting final disposal.

#### ***4.8 Site-Specific Safety and Health***

Safety and health requirements for this site investigation are provided in the SSHP attachment for the Cleared Area with Mound, Choccolocco Corridor, Parcel 237(7). The SSHP attachment will be used in conjunction with the SHP.

## ***5.0 Project Schedule***

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The project schedule for the SI activities is provided by the IT project manager to the Base Realignment and Closure Cleanup Team on a monthly basis.

## 6.0 References

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Environmental Science and Engineering Inc. (ESE), 1998, ***Final Environmental Baseline Survey, Fort McClellan, Alabama***, prepared for U.S. Army Environmental Center, Aberdeen Proving Ground, Maryland, January.

Fort McClellan (FTMC), 1997, ***Fort McClellan Comprehensive Reuse Plan***, prepared under contract to the Calhoun County Commission, November.

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IT Corporation (IT), 1998b, ***Final Installation-Wide Work Plan, Fort McClellan, Calhoun County, Alabama***, August.

U.S. Army Corps of Engineers (USACE), 1994, ***Requirements for the Preparation of Sampling and Analysis Plans***, Engineer Manual EM 200-1-3, September 1.

U.S. Army Corps of Engineers (USACE), 1998, ***Statement of Work for Task Order CK005, Modification No. 1, Site Investigations at Fort McClellan, Alabama, Including Ecological Screening Sites (Creeks and Tribes), and Removal of Indoor Firing Ranges***, May.

U.S. Department of Agriculture (USDA), 1961, ***Soil Survey, Calhoun County, Alabama***, USDA Soil Conservation Service in cooperation with Alabama Department of Agriculture and Industries, Alabama Agricultural Experiment Station, Series 1958, No. 9, September.

U.S. Environmental Protection Agency (EPA), 1993, ***Data Quality Objectives Process for Superfund, Interim Final Guidance***, EPA 540-R-93-071, September.

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